May 5, 1970 D. J. SHEPPARD 3,509,870

LUNCHBOX AND FOOD-WARMER ASSEMBLIES

Filed May 9, 1968 4 Sheets-Sheet 1

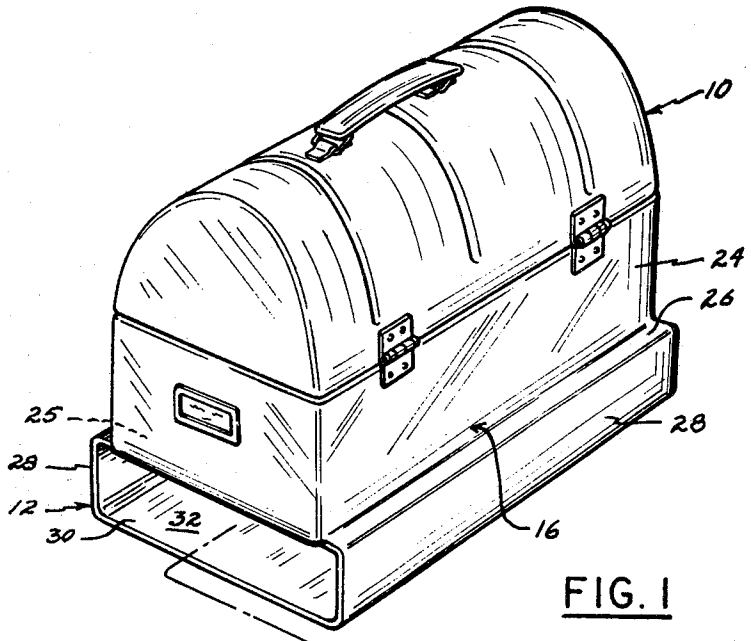


FIG. 1

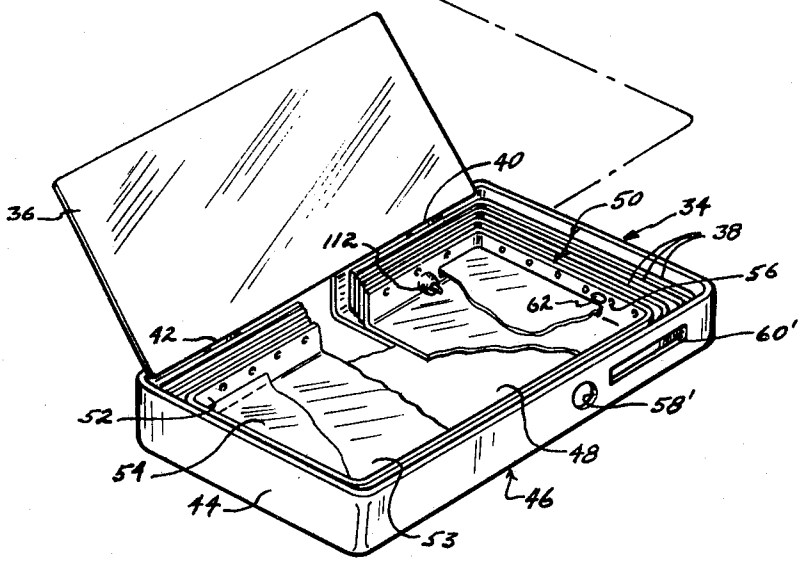


FIG. 2

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LUNCHBOX AND FOOD-WARMER ASSEMBLIES

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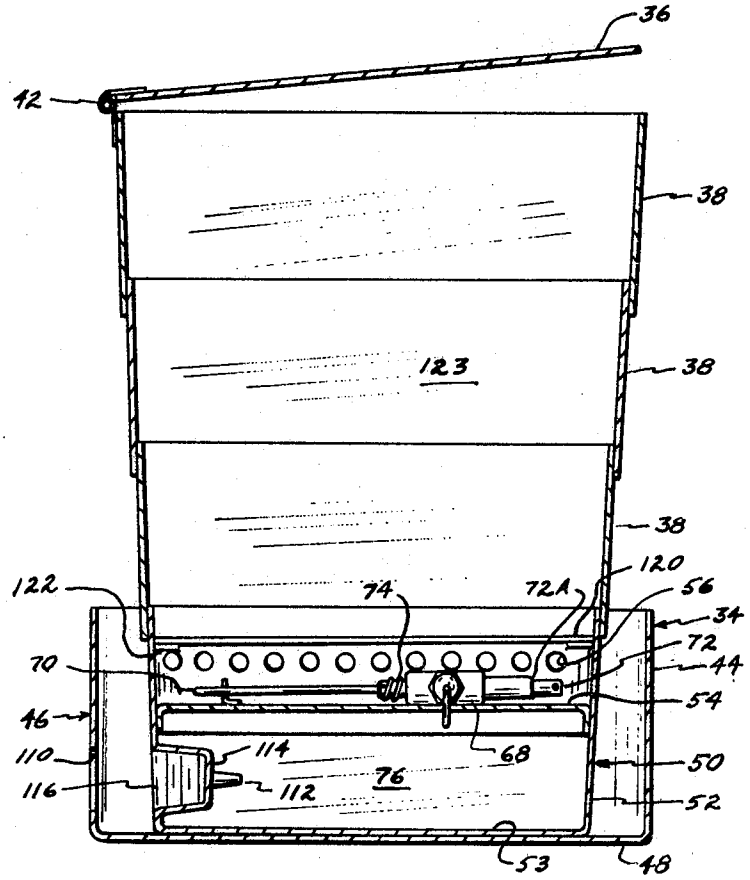


FIG. 3

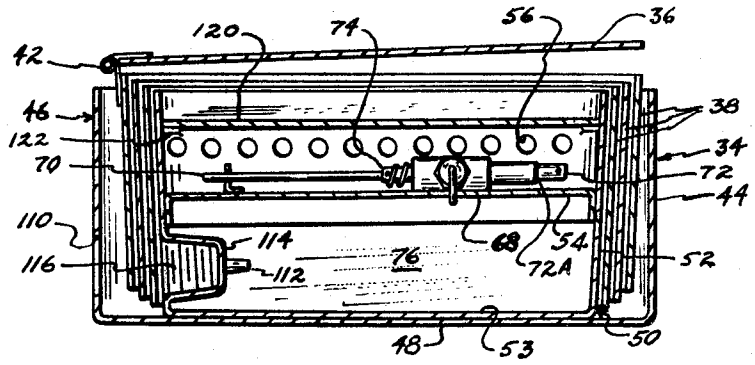


FIG. 4

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LUNCHBOX AND FOOD-WARMER ASSEMBLIES

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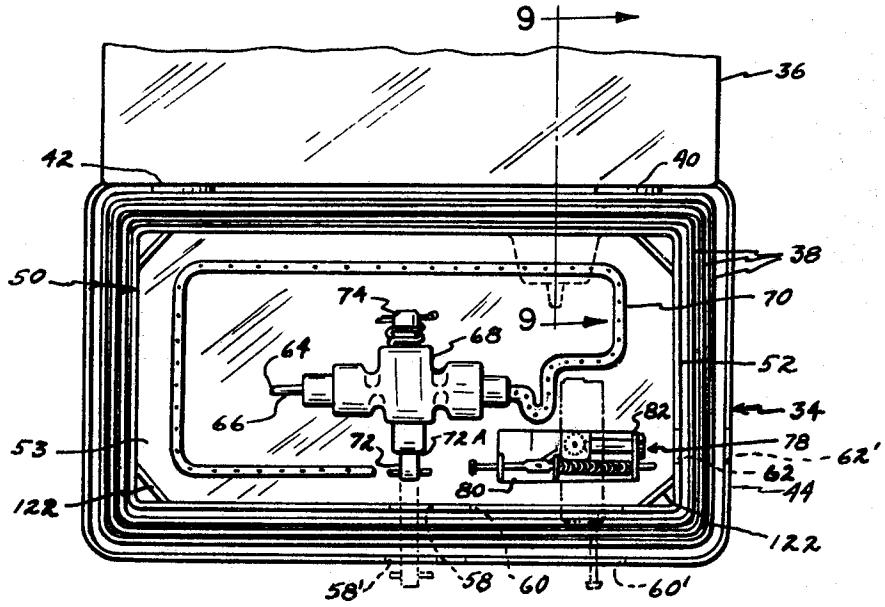


FIG. 5

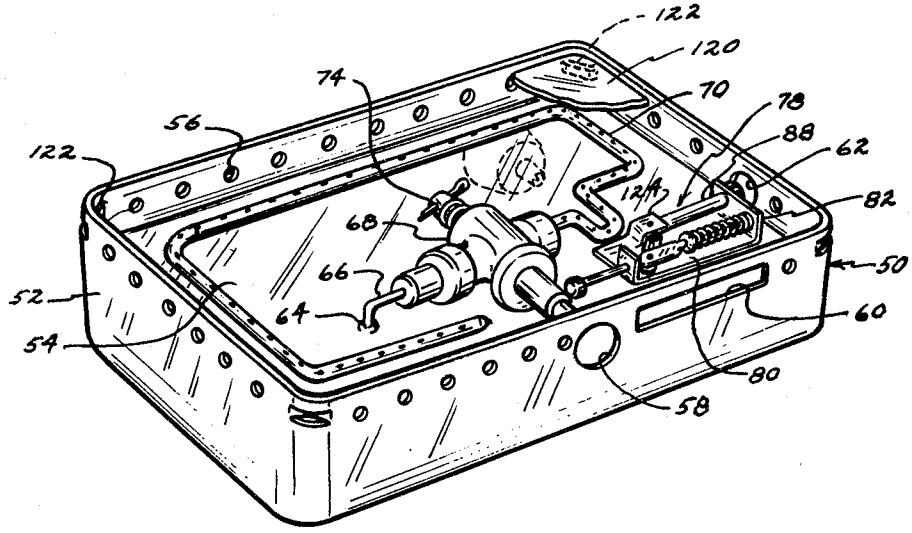


FIG. 6

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LUNCHBOX AND FOOD-WARMER ASSEMBLIES

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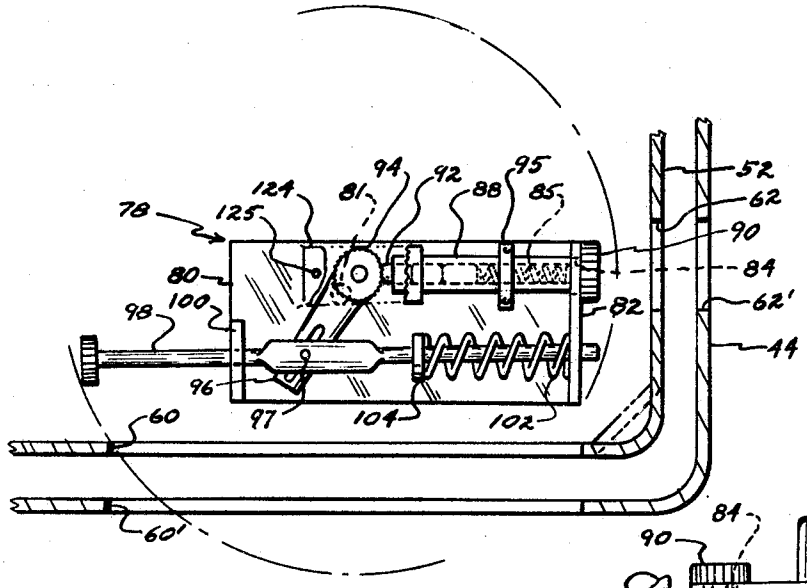


FIG. 7

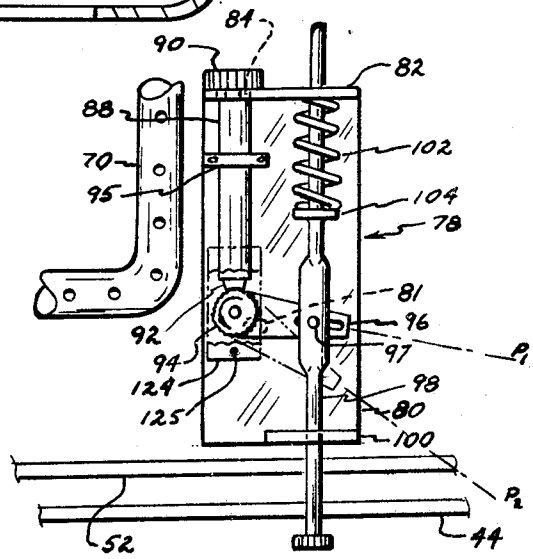


FIG. 8

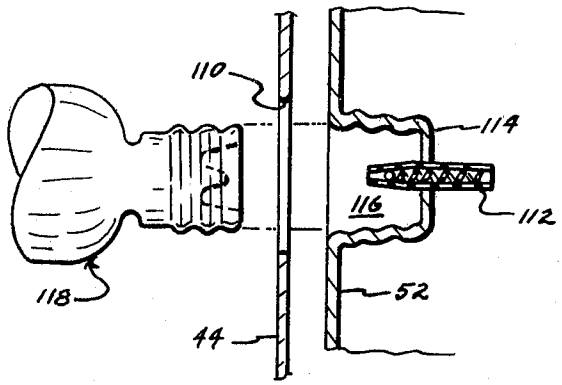


FIG. 9

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United States Patent Office 3,509,870 Patented May 5, 1970

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LUNCHBOX AND FOOD-WARMER ASSEMBLIES

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Int. Cl. F24c 3/14
U.S. Cl. 126—265 15 Claims

ABSTRACT OF THE DISCLOSURE

A portable food warmer assembly adapted for storage in a lunchbox comprising a lidded container and an integral base compartment for the food warmer assembly, which comprises a base unit carrying a gas fuel tank spaced from the base unit side walls. An oven structure is carried by the base unit and has side walls selectively telescopically extensible into and out of the space intermediate the base unit side walls and the fuel tank. A burner tube connected with the fuel tank overlies same.

A manually operated valve is adapted to selectively admit fuel from the fuel tank to the burner tube. A lighter device similar to a flint-type cigarette lighter is adapted to be extended from the base unit for selective manual ignition of the fuel in the burner. A filler valve is provided on the tank. The valves and the lighter are accessible through apertures provided in the base unit side walls, which apertures are closed by the side walls of the oven structure when same are telescoped into the space provided.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to lunchbox structures and to portable food-warmers, in which the lunchbox provides a storage compartment for the portable food-warmer, which is substantially self-contained and includes an oven compartment in which the food which is otherwise stored in the lunchbox may be selectively warmed.

Background of the invention

This invention arises as a result of a need for a device which will permit an individual to prepare a hot meal, particularly when away from home and other sources of such meals are inconvenient or nonexistent.

SUMMARY OF THE INVENTION

The invention resides in the unique collapsible structure of the food-warmer assembly adapting same for convenient storage in the specially prepared compartment of a lunchbox, the food-warmer being self-contained with its own fuel tank, burner, valves and fuel igniting device being accessible for use when an oven portion is telescopically extended from the food-warmer unit.

DESCRIPTION OF THE PRIOR ART

The following patents showing various lunchboxes and food-warmers are known to applicant:

U.S. Pats. Nos. 2,513,218, 2,518,343, 2,713,111, and 2,973,756. These patents disclose lunchbox constructions and food-warmers associated therewith, but it is apparent that they do not have the convenience and versatility of my invention.

DESCRIPTION OF THE DRAWINGS

For a more complete understanding of my invention, reference may be had to the accompanying drawings, illustrating a preferred embodiment of the invention in which like reference characters refer to like parts throughout the several views, and in which:

FIG. 1 is a perspective view of a lunchbox showing the integral compartment in which the food-warmer assembly is adapted to be contained.

FIG. 2 is a perspective view, partially broken away, of the food-warmer assembly in collapsed or telescopically closed position but with the lid opened to show the interior, and with operable components deleted for clarity.

FIG. 3 is a cross-sectional view of the food-warmer assembly with the side walls of the oven in the extended position.

FIG. 4 is a cross-sectional view of the food-warmer assembly showing the side walls of the oven in collapsed position.

FIG. 5 is a top plan view of the food-warmer assembly with the lid open to illustrate some of the interior structure and components.

FIG. 6 is a perspective view of the fuel tank portion of the food-warmer assembly showing the valve, burner and lighting devices therefor.

FIG. 7 is an enlarged fragmentary cross-sectional view showing the lighting or igniting device of the present invention.

FIG. 8 is an enlarged fragmentary cross-sectional view of the device of FIG. 7 in operative position, and

FIG. 9 is an enlarged fragmentary cross-sectional view taken substantially on the line 9—9 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the present invention comprises a food-warmer unit **34**, having a base unit **46** and an oven unit **50** either secured within or removably disposed within the base unit **46**. The complete unit **34** can be readily stored in a food-warmer storage compartment **12** integrally formed with the bottom of a lunchbox container **10**.

As illustrated in FIG. 1 the lunchbox **10** is substantially of any well known construction except that it is constructed to be adaptable to the present invention.

The base portion **16** of the lunchbox **10** has side walls **24** and a bottom wall **25**. The bottom wall **25** is secured to and integral with a top wall **26** of a storage compartment **12** for receiving the portable food-warmer unit **34**. The food-warmer storage compartment **12** preferably comprises the top wall **26**, side walls **28**, bottom wall **30** and an open side **32**. This storage compartment **12** selectively slidingly receives and stores the foodwarmer unit generally indicated at **34**.

As shown in FIGS. 2, 3 and 4, the food-warmer unit **34** preferably comprises the aforesaid base unit **46**, vertically telescopically extensible side walls **38** and an oven unit **50**. The base unit **46** has side walls **44**, a bottom wall **48** integral therewith and an open top. The extensible side walls **38** are disposed within the base unit **46** between the outer walls **44** and the oven unit **50** and are selectively telescopically extensible into and out of this space. On the outermost extensible side wall **38** a lid or top plate **36** is hingedly secured thereto as at **40** and **42**.

The oven unit **50** has upstanding side walls **52**, a base wall **53** and an open top. The base wall **53** may or may not be secured to the bottom wall **48** of the base unit **46** as desired.

A reflector plate **54** is emplaced with the oven unit **50** and is hermetically secured to the upstanding side walls **52** of the unit oven **50**.

The reflector plate **54**, which supplies radiant heat to the foodstuff also serves as the top plate of a fuel tank **76** defined by the reflector plate **54** and the lower portion of the oven unit **50**.

As shown in FIGS. 5 and 6, the reflector plate **54** has an aperture **64** through which an inlet tube **66** interconnects the fuel tank **76** with a perforated burner tube **70**

mounted on the reflector plate **54**. A conventional metering valve assembly **68** is positioned between the inlet tube **66** and the perforated burner tube **70** and regulates the fuel flow from the fuel tank **76** through the inlet **66** and into the perforated burner tube **70**.

A telescoping manual regulating means **72** is provided on the valve assembly **68** and preferably comprises a shank portion coextensive with a shaft **74** of the valve assembly **68**. The manual regulating means **72** telescopes as at **72A** through registering apertures **58** and **58'** provided in the oven unit **50** and the base unit **46**, respectively, to provide exterior regulation of the fuel flowing into the burner tube **70**.

As is shown in FIGS. 2, 3 and 4, when the food warmer unit **34** is operable and the sidewalls **38** are extended, ventilation to the oven unit **50** is provided through port vents **56** peripherally disposed on the side walls **52** of the oven unit **50** above the reflector plate **54**.

The fuel in the burner tube **70** is ignited by a means similar to that employed in a cigarette lighter and is generally indicated at **78**.

The igniter assembly **78** is constructed to provide a means whereby its spark is unidirectionally emitted into the fuel escaping from the initial perforations in the burner tube **70**. As will be more fully described hereinafter, the igniter assembly is operable only when it is pivotally rotated so that it extends through registering apertures **60** and **60'** respectively provided in the oven unit side wall **52** and the base unit sidewall **44**.

As is illustrated in FIGS. 7 and 8, the igniter assembly preferably comprises a base plate **80** pivotally secured to the reflector plate **54** by any means such as a pin **81**. An upstanding flange **82** integral with the base plate **80** has an aperture **84** provided therethrough.

An open ended, cylindrical tube **88** is aligned with the aperture **84** by a collar **95** secured to the base plate **80**. The end portion of the tube **88** aligning with aperture **84** threadingly receives a thumb screw **90** with a spring **85** disposed thereon. The spring **85** urges a flint **92**, which is enclosed within the tube **88**, to the opposite open end of the tube **88** where a striker wheel **94** engages the flint as it is urged beyond this open end.

The striker wheel **94** is secured to a slotted arm **96** which is in turn limitedly pivotally connected as at **97** to a plunger **98** which is positioned to extend through the flange **82** and an upstanding flange **100**. A washer **104** is mounted on plunger **98** and compreses a spring **102** against the flange **82** to normally urge the plunger **98** to the left as shown in FIG. 7.

To ignite the fuel in burner tube **70**, the igniter assembly is first rotated counterclockwise through the registering access apertures **60** and **60'** to extend outwardly for manual operation. The plunger **98** is then depressed against the force of the spring **102** causing the slotted arm **96** to move from its normal position P_1 to its limited position P_2 to rotate the wheel **94** against the flint **92** to generate a spark and ignite the fuel issuing from the burner tube **70**.

Unidirectional emission of the sparks is promoted by a shield **124** secured to the base plate **80** as at **125** and which overlies the striker wheel **94** and the flint **92** to prevent any mishaps from occurring by errant sparks, since any such sparks will be deflected towards the burner tube **70** by the shield **124**.

Registering apertures **62** and **62'** disposed in the oven unit side wall **52** and the base unit side wall **44** respectively, provide access for exteriorly replacing the flint **92** whenever it is desired by removing the thumb screw **90** and the spring **85** and inserting a new flint, after which the spring **85** and the thumb screw **90** are reinstalled.

It will be readily appreciated that the metering and the ignition of the fuel which could otherwise accidentally injure the operator are operations performed exteriorly of the oven unit **50** and the base unit **46**.

Referring again to FIG. 6 a grill plate **120** is removably emplaced within the oven unit **50** and rests on supports **122** which are punched out of the sidewalls **52** at their intersections and near the top of the side walls **52** as shown in FIG. 4. When the extensible side walls **38** are telescopingly vertically extended, the area within these side walls **38** and the grill plate **120** defines an oven chamber **123** within which the foodstuff to be heated is deposited atop the grill plate **120** and is thereby protected from the direct flame emanating from the burner tube **70**.

To operate the food-warmer unit **34**, the extensible side walls **38** are vertically telescopingly extended to define the oven chamber **123**. The fuel flow regulating means **72** is then telescoped outwardly through registering apertures **58** and **58'** and so rotated as to give the desired fuel flow into the burner tube **70**. The operator then pivots the igniter assembly **78** to extend the plunger **98** through the registering apertures **60** and **60'**, and then depresses the plunger **98** so that the resultant spark will ignite the fuel as hereinbefore described. The oven unit is now operational and the foodstuff can be heated.

When the fuel tank **76** needs to be replenished, means are provided to accomplish this, also exteriorly of the oven unit **50** and the base unit **46**. As shown, a conventional spring valve means **112** is provided as an inlet into the tank **76**, being secured to a wall **114** of a recess **116** provided on the side wall **52** of the oven unit **50**. The recess registers with an aperture **110** provided in the base unit side wall **44**. The neck of a pressurized fuel refill bottle **118** or the like is inserted through the aperture **110** and recess **116** and engages the valve **112**. The force of the fuel in the fuel supply **118** opens the valve **112** against the spring to allow the fuel to enter the fuel tank **76**.

When not in use, the extensible side walls **38** are telescoped into the space intermediate the oven unit **50** and the side walls **44** of base unit **46**, thus closing off registration between all the normally registering apertures preventing inadvertent operation of the valves and igniter. The lid **36** is then closed so that the entire assembly lies within the base unit **46**, which can then be slidingly inserted into the storage compartment **12** of the lunchbox through its open side wall **32**.

The food-warmer unit **34** can be used, as well as stored, independently of the lunchbox container **10**. The food-warmer unit can be collapsed and stored within the base unit to be transported and employed as is or carried in another container suitably adapted for the purpose.

In a less expensive model of the invention, the igniter assembly is eliminated and the fuel is ignited by inserting a lit match or the like through the apertures **58** and **58'** when the oven side walls are extended.

Although I have described and shown only one embodiment of my invention, it will be apparent to one skilled in the art to which the invention pertains that various changes and modifications may be made therein without departing from the spirit of the invention as expressed by the scope of the appended claims.

I claim:

1. A portable food-warmer assembly comprising

(a) a base unit including an open-top container

(b) an oven unit mounted therein and including a gas fuel tank spaced from the side walls of said base unit

(c) a perforated burner tube overlying said tank and connected therewith,

(d) a hot plate secured to said oven unit overlying said burner tube, and

(e) said oven unit having side walls selectively telescopically extensible into and out of the space intermediate said base unit side walls and said fuel tank.

2. The assembly as defined in claim **1** and including a lid hinged to said oven unit side walls.

3. The assembly as defined in claim **1** and including manually operable valve means for selectively admitting

fuel from said tank to said burner, a side wall of said base unit having an aperture registering with an aperture in said unit and with valve means for manual access thereto.

4. The assembly as defined in claim **3** and in which the side walls of said oven unit are arranged when telescoped into said space to close registration between said apertures.

5. The assembly as defined in claim **1** and including manually operable igniter means for selectively igniting fuel issuing from perforations in said burner tube, a side wall of said base unit having an aperture registering with an aperture in said oven unit and with said igniter means to provide manual access thereto.

6. The assembly as defined in claim **5** and in which the side walls of said oven unit are arranged when telescoped into said space to close registration between said apertures.

7. The assembly as defined in claim **1** and including valve means disposed in a recess in said tank for selectively connecting a filler valve nozzle thereto from exteriorly of said assembly, a side wall of said base unit having an aperture registering with said recess for access to said valve.

8. The assembly as defined in claim **7** and in which the side walls of said oven unit are arranged when telescoped into said space to close registration between said aperture and said recess.

9. The assembly as defined in claim **1** and including a heat reflector plate disposed between said burner tube and said tank, said burner tube having an inlet extending through said reflector plate and connected with said tank.

10. The assembly as defined in claim **1** and in which said burner tube has an end connected with said tank, and includes a valve means for selectively admitting fuel from the tank to said tube.

11. The assembly as defined in claim **10** and including igniter means disposed adjacent a burner tube perforation and selectively operable to ignite fuel issuing therefrom.

12. The assembly as defined in claim **11** and in which said igniter means comprises a flint and striker element arranged and operable to spark ignite fuel issuing from said burner tube.

13. The assembly as defined in claim **12** and including means for promoting unidirectional emission of a spark from said flint, said promoting means comprising a shield overlying said flint and said striker.

14. The assembly as defined in claim **12** and in which a side wall of said base unit has an aperture registering with an aperture in said oven unit, said apertures being adjacent said igniter assembly, said igniter assembly being inoperable when normally positioned within said oven unit, and in which said igniter assembly is operable only when extended through said registering access aperture.

15. A lunchbox assembly comprising

(a) a container for carrying food articles

(b) a base integrally constructed with the bottom of said container and having a compartment provided with an open side

(c) a portable food-warmer assembly sized and adapted for selective storage in said compartment and removal from said open side, and

(d) said food-warmer assembly comprising a base unit including an open-top container, an oven unit mounted therein and including a gas fuel tank spaced from the side walls of said base unit, a perforated burner tube overlying said tank and connected therewith, and a hot plate secured to said oven unit overlying said burner tube, and said oven unit having side walls selectively telescopically extensible into and out of the space intermediate said base unit side walls and said fuel tank.

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CHARLES J. MYHRE, Primary Examiner

U.S. Cl. X.R.

126—38, 275; 431—203, 277