

Dec. 23, 1941.

E. A. LINDEMANN

2,266,881

FLUID FUEL STOVE AND METHOD OF MAKING THE SAME

Filed May 11, 1937

2 Sheets-Sheet 1

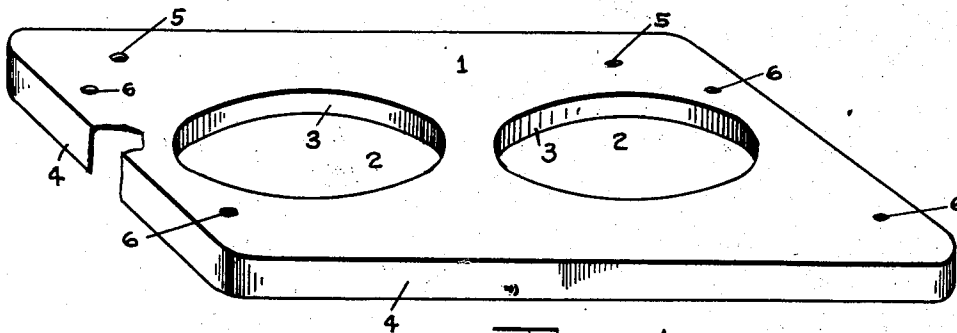


Fig-1

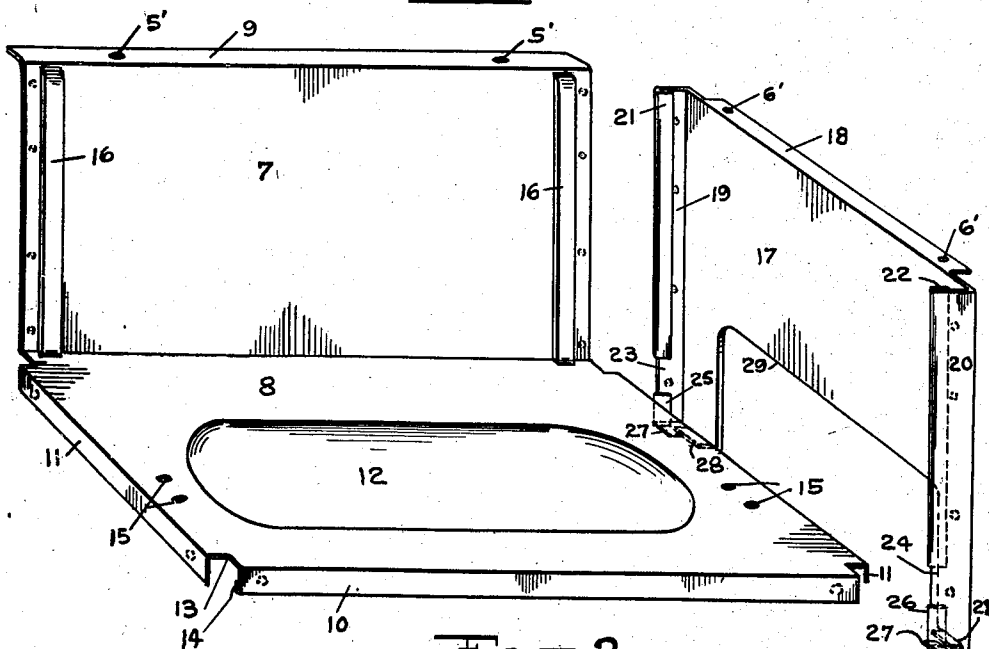


Fig-2

Fig-3

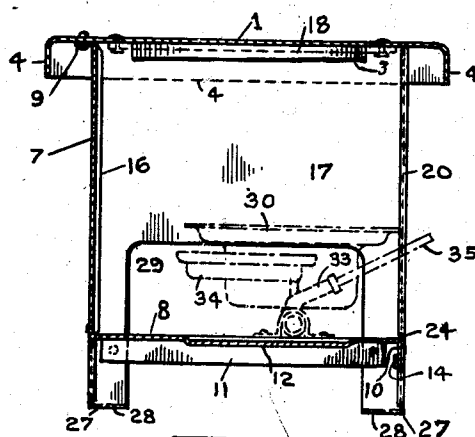


Fig-4

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2 Sheets-Sheet 2

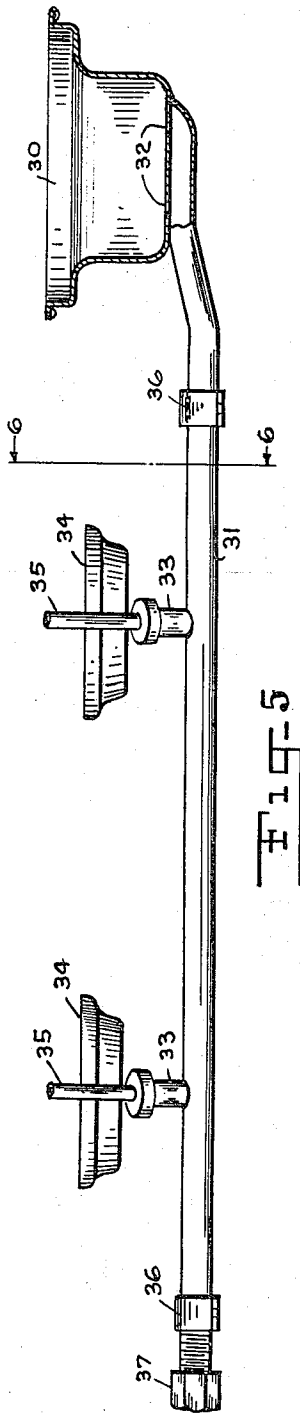


FIG-5

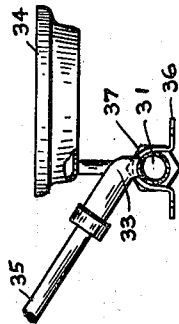


FIG-6

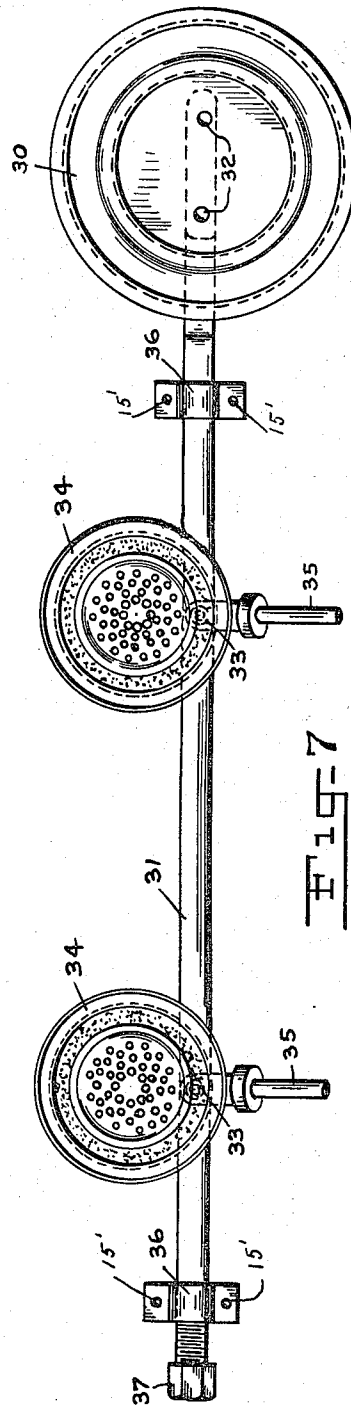


FIG-7

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UNITED STATES PATENT OFFICE

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FLUID FUEL STOVE AND METHOD OF
MAKING THE SAMEEugene A. Lindemann, Milwaukee, Wis., assignor
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Application May 11, 1937, Serial No. 141,891

4 Claims. (Cl. 29-148)

The improvements relate primarily to cooking stoves employing liquid hydrocarbon fuel, but may be applied to stoves for other purposes and employing gaseous or other fuel.

The objects of the improvements, among others, are to produce a stove of this general character of very simple, strong and serviceable construction at a minimum cost for labor and materials, by simplifying the structure and parts thereof and so forming the parts that they may be made and assembled quickly and by the employment of a few simple manufacturing operations, principally mechanical, and to thus eliminate the expense and uncertainty of manual work as far as possible.

Other objects and advantages will appear from the following description and the accompanying drawings, referred to therein, and in which—

Fig. 1 is a perspective top view of the cover;

Figs. 2 and 3 are perspective inside views of back and end members respectively before assembling;

Fig. 4 is a transverse medial, vertical section of the stove frame assembled with a burner and fuel supply member shown in dotted lines therein;

Fig. 5 is an elevation of the burners and fuel supply members with the lower fuel tank in longitudinal section;

Fig. 6 is a side elevation of one of the burners with its valve sleeve mounted on the main oil supply pipe which is shown in cross section; on the line 6-6 of Fig. 5; and

Fig. 7 is a plan of the parts shown in Fig. 5.

The general plan of assembling includes forming the cover, combined back and bottom and the ends separately with integral connecting parts, then assembling them, forming the lower tank, burners and individual burner pipes with valve sleeves and uniting them with the main oil supply pipe on which they are mounted together with the connecting straps for mounting them on the bottom so as to form an integral unit, then placing this latter structure on the bottom and securing it by the straps to said bottom.

The cover or top 1 is formed of a single piece of sheet material with cooking holes 2 and their depending flanges 3 and the downwardly extending marginal flanges 4 of the top punched out and stamped in one operation, also the rivet holes 5 and 6. This is integral unit No. 1 of the stove.

Unit No. 2 comprises the back 7, bottom 8, horizontally and backwardly turned top flange 9,

downwardly turned front bottom flange 10 and similarly turned bottom side flanges 11, drip pan or recess 12 in the bottom and rivet holes 5' in the said top flange adapted to register with the rivet holes 5 of the top or cover. The corners of the bottom are notched as shown at 13, to provide holes therein which will prevent the accumulation of dirt, grease, and particles of food, and this also facilitates the bending of the bottom flanges. The lower edge of the front flanges is folded upwardly and inwardly to strengthen said edge and provide a rounded edge as shown at 14, and the bottom is also provided with a pair of bolt holes 15, for mounting and securing the burner and fuel supply unit thereon. The back is also provided near its ends with vertical embossments 16 to receive the inwardly folded vertical edges 21 of the end members. All these parts are formed by punching, stamping and folding a single piece of sheet metal so that they are all features of a single integral unit.

The third unit is the end member, also formed from a single piece of sheet metal, and comprises the end proper 17, outwardly turned horizontal top flange 18, inwardly turned vertical side flanges 19 and 20 having inwardly folded edges 21 and 22 to engage the vertical grooves 16 of the back, the former cut away at 23 and the latter at 24 to receive the bottom edge of the back and the front flange 10 of the bottom respectively. The bottom portions 25 and 26 of these folded edges serve also to strengthen and reinforce the portions of the end which extend below the stove bottom and form short, angular legs for supporting and elevating the structure. The lower edges of the flanges 19 and 20 are turned horizontally inward to form feet 27 and the bottom edges of the plate 17 are turned inwardly in similar manner to form feet 28, so as to give the legs a substantial base and prevent them from abrading any surface on which the stove may be placed.

The fourth unit is a duplicate of the third, and forms the opposite end of the stove frame. It will be seen therefore that the two end members are so formed that they may be positioned and secured in the assembling operation without regard to front or back edges, since the construction at both ends of this element is identical. This not only facilitates assembling but also enables the maker to form the ends of these units by the same operation and the same machines.

Each end member is cut out at the bottom to form an end opening therein, as shown at 29, and through this opening the burner and fuel pipe

portion of the member to which these parts belong may be inserted after the frame of the stove and the said last-named member have been assembled and formed into units.

The fifth unit comprises the lower fuel tank 30, the main fuel supply pipe 31 having its ends soldered to the bottom thereof and receiving the liquid fuel through holes 32, the branch pipes 33 communicating between the main pipe and the burner 34 mounted on said branch pipe and the valve sleeve 35 secured to and communicating with the branch pipe. A suitable valve seat in the branch pipe and a needle valve seating therein with its stem threaded in the sleeve 35 is provided to control the flow of fuel to each burner. The straps 36 are also secured to the fuel supply pipe, and all of these parts being soldered together constitute a single unit which is formed before any of the burner or fuel supply parts are placed in the stove frame. The usual screw cap 37 is carried by the end of the main pipe.

After the burner and fuel supply unit has been assembled, it may be tinned or galvanized as a unit, so that it will have an unbroken, finished rust-proof surface throughout, which it could not have if soldering or brazing operations were performed after this treatment. The positioning and securing of this unit is also such that all supporting parts and the labor of applying them are dispensed with except for the straps 36, which are provided with bolt holes 15' registering with the bolt holes 15 of the bottom 8 through which bolts are passed, to receive nuts under the bottom; and by this simple operation the burner and oil supply unit is mounted and secured in the stove frame.

In assembling the stove frame, the back, bottom, ends and top are simply fitted together, secured by bolts passing through the bolt holes therein and spot welded at the points indicated by small dotted circles, or at other convenient places. The top flange 18 of the end unit has bolt holes 6' registering with the bolt holes 6 at the top.

From the foregoing it will be seen that the present invention enables the manufacturer to construct the stove in five individual units, and to assemble these units to form a complete stove—barring manually removable parts—by simply fitting them together and then applying a spot welder to overlapping portions, so formed and positioned that spot welding electrodes may be applied thereto. The top and the straps of the burner and fuel supply unit could also be spot welded, but are preferably riveted or bolted, as shown and described, to give them additional strength and security, the rivet and bolt holes being positioned to give easy access of riveting and bolt applying devices.

The burner and fuel supply unit may also be placed in position and secured to the bottom before the side and top members are placed in position, as the openings in the side members extend to the bottom thereof and said leg portions of the side members will therefore straddle the fuel supply pipe.

What I claim is:

1. The herein described fluid fuel stove which comprises four separate and distinct sheet metal units, namely, (1) a sheet metal top provided with a cooking hole, (2) an angular back and bottom unit, integral turned edge flanges on said unit engaging top and side units (3 and 4) two side units, integral turned edge flanges thereon engaging with the top and back units, integral

downwardly extending portions at the lower corners of each and bottom horizontally turned portions at the lower extremities of said extending portions forming supporting legs and feet the said four units being assembled and forming a hollow stove frame and suitable securing means uniting the said back, bottom and side flanges with the parts engaged by them, said stove also comprising a fifth unit consisting of a lower burner member, a fuel tank and a connecting fuel supply conduit communicating between them and joined together and said conduit fixing the position of this fifth unit on the bottom of the said back and bottom unit.

2. The herein described fluid fuel stove which comprises four separate and distinct sheet metal units, namely, (1) a sheet metal top provided with a cooking hole, (2) an angular back and bottom unit, integral turned edge flanges on said unit engaging top and side units, (3 and 4) two side units, integral turned edge flanges thereon engaging with the top and bottom units, integral downwardly extending portions at the lower corners of each and bottom horizontally turned portions at the lower extremities of said extending portions forming supporting legs and feet one of said units being provided with an opening at its lower part of a size to receive the supply pipe and burner parts of the fifth unit, the said four units being assembled and forming a hollow stove frame and suitable securing means uniting the said back, bottom and side flanges with the parts engaged by them, said stove also comprising a fifth unit consisting of a lower burner member, a fuel tank and a connecting fuel supply conduit communicating between them and joined together and position fixing and securing means between this fifth unit and the bottom of the said back and bottom unit.

3. The herein described fluid fuel stove which comprises four separate and distinct sheet metal units, namely (1) a sheet metal top provided with a cooking hole, (2) an angular back and bottom unit, integral turned edge flanges on said unit engaging top and side units, said back portion having recesses near its edges to receive and interengage with projections on the side units to connect and position the parts, (3 and 4) two side units, integral turned edge flanges thereon engaging with the top and the back of the second unit said flanges for engaging the back having recess engaging projections thereon and integral downwardly extending portions at the lower corners of each and bottom horizontally turned portions at the lower extremities of said extending portions forming supporting legs and feet, the said four units being assembled and forming a hollow stove frame by being brought together and interengaged, and suitable securing means uniting the said back, bottom and side flanges with the parts engaged by them, said stove also comprising a fifth unit consisting of a lower burner member, a fuel tank and a connecting fuel supply conduit communicating between them and joined together and said conduit fixing the position of this fifth unit on the bottom of the said back and bottom unit.

4. The herein described method of making a fluid fuel stove, which consists in first forming a stove frame of sheet metal comprising top, sides, back and bottom and providing in a side at its bottom an opening of a size to permit the passage therethrough into the interior of the said frame of a lower burner member and a fuel supply conduit on which said member is mounted of

a combustion unit comprising said lower burner member, a fuel tank and fuel supply conduit connecting them, the fuel supply conduit being greater in length than the width of the stove frame and having said fuel tank at one of its ends, assembling and finishing said combustion unit outside the said stove frame then inserting

said burner member and the major part of said conduit in said frame by passing them through said opening and then securing them to the bottom of said frame with the fuel tank in position 5 outside the frame and thus completing the stove.

EUGENE A. LINDEMANN.