Dec. 24, 1929. J. IRONSIDE 1,740,943

COLLAPSIBLE STOVE STRUCTURE

Filed July 14, 1928 4 Sheets-Sheet 1

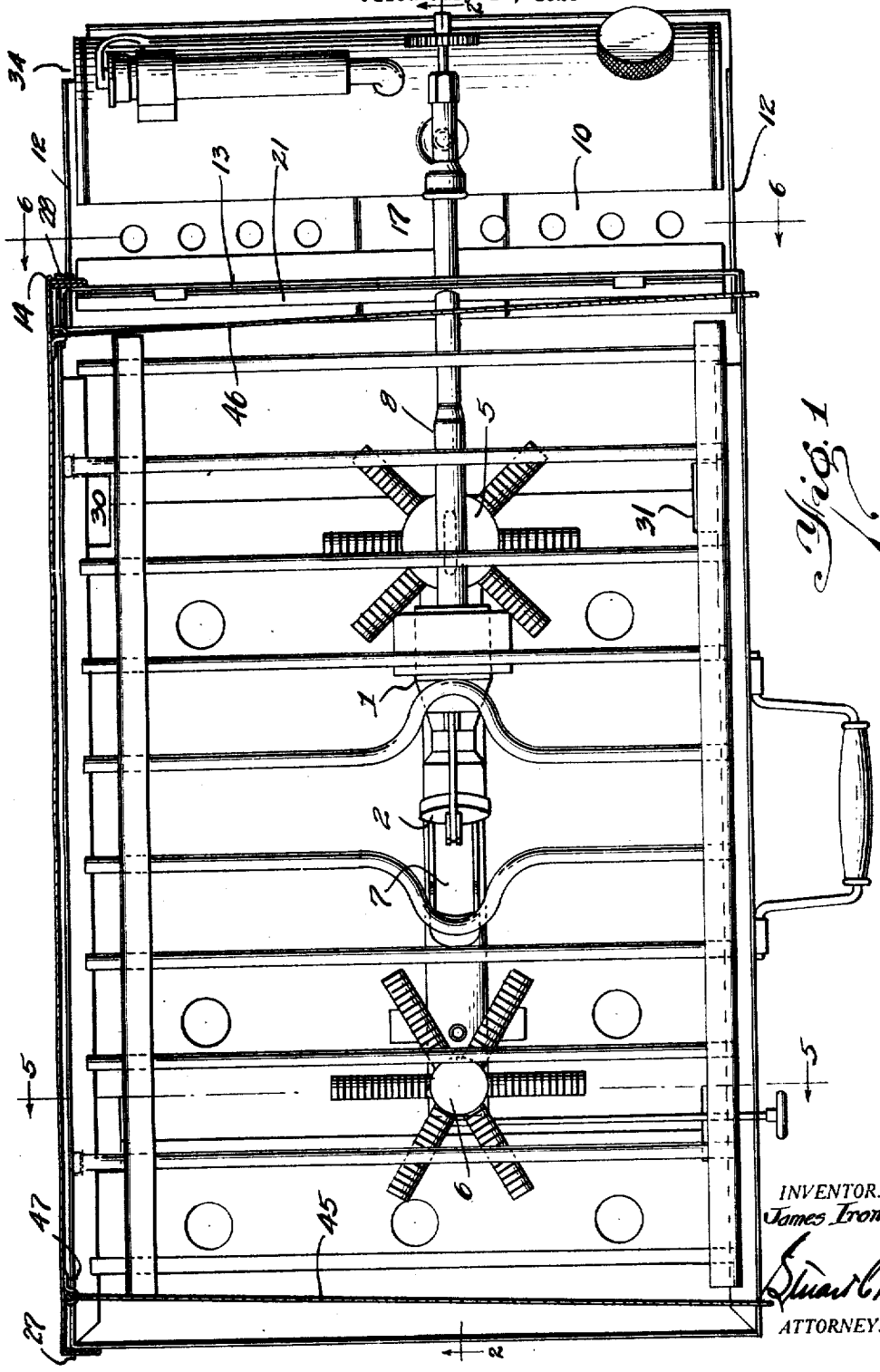


Fig. 1

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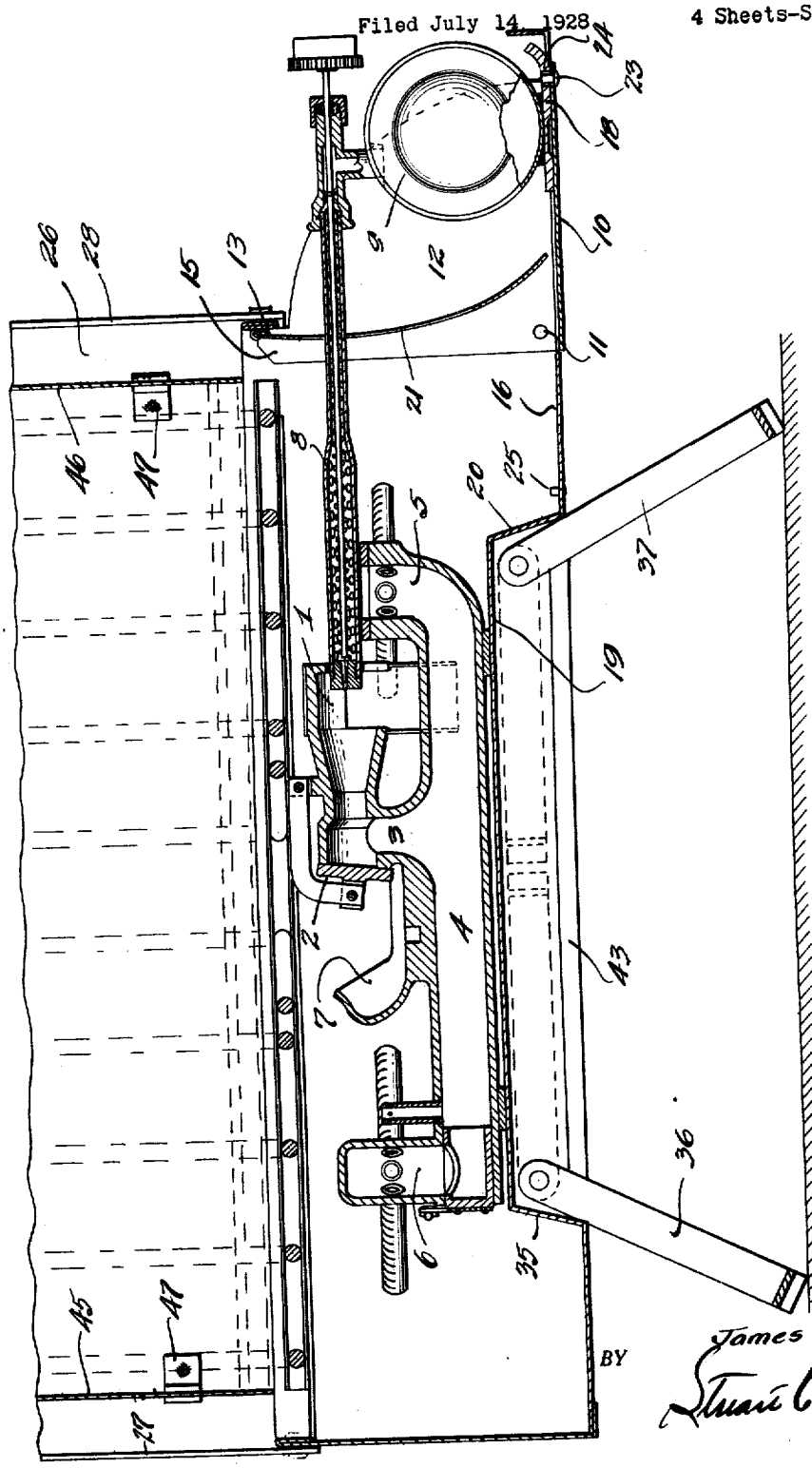


Fig. 2

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COLLAPSIBLE STOVE STRUCTURE

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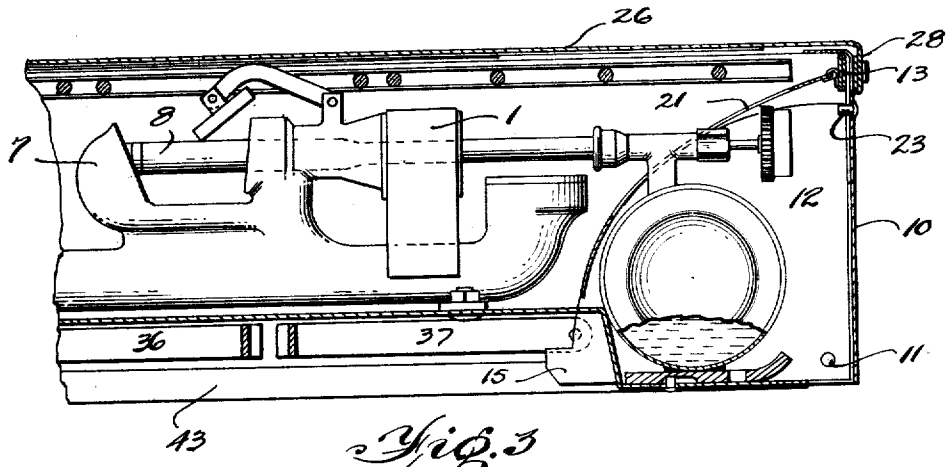


Fig. 3

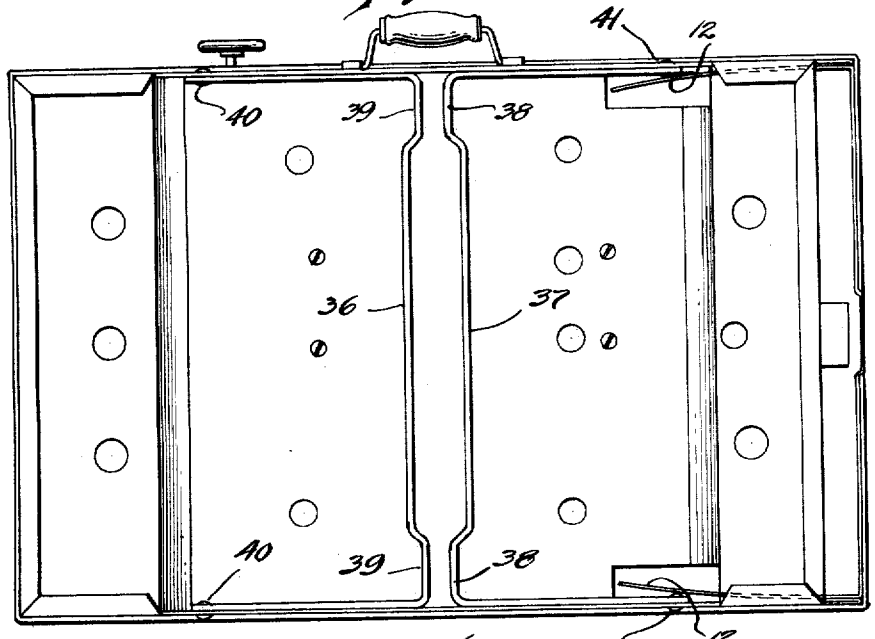


Fig. 4

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COLLAPSIBLE STOVE STRUCTURE

Filed July 14, 1928 4 Sheets-Sheet 4

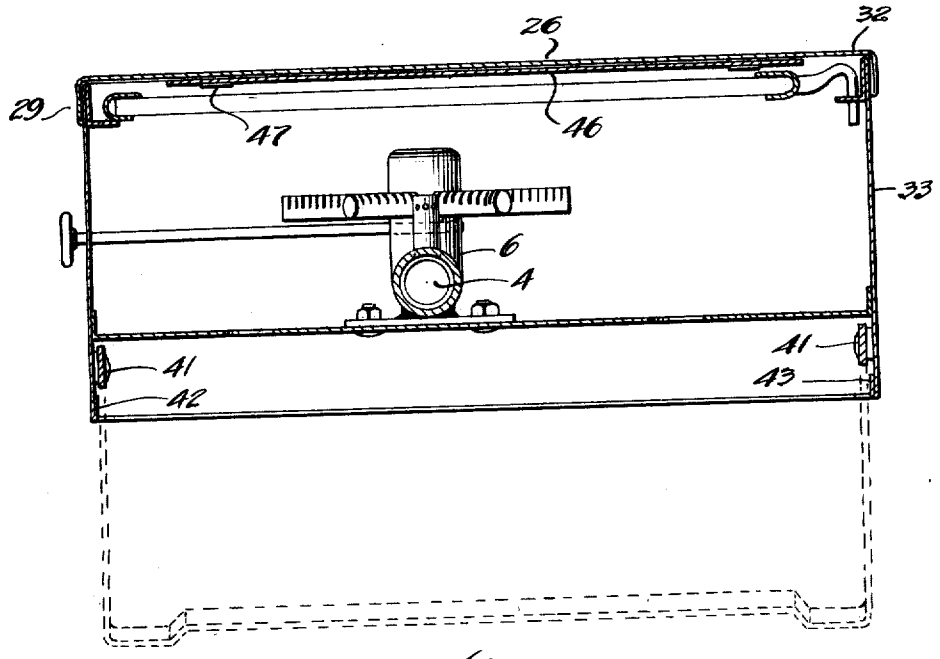


Fig. 5

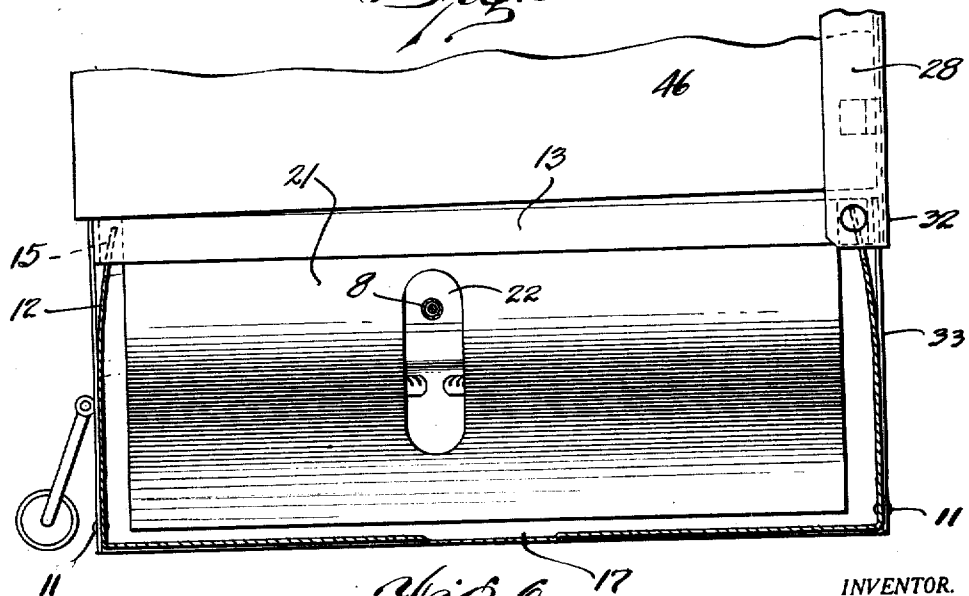


Fig. 6

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Patented Dec. 24, 1929 1,740,943

UNITED STATES PATENT OFFICE

JAMES IRONSIDE, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CLAYTON & LAMBERT MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

COLLAPSIBLE STOVE STRUCTURE

Application filed July 14, 1928. Serial No. 292,640.

This invention relates to collapsible stove structure, and has to do particularly with stoves of the liquid fuel type.

The present invention contemplates the provision of a collapsible stove structure particularly adaptable to stoves of the oil and gasoline type having a slidable generator and fuel supply unit. More specifically, this novel stove structure comprises a compact, extremely simple, unitary stove structure, various parts of which are foldable and so designed as to cooperate with other parts in a novel manner, whereby to make the stove structure easily set up or collapsible with the use of a minimum number of parts.

A further feature of the invention has to do with a novel combination between a foldable wall of the stove casing and the fuel supply unit for the burners, said foldable wall serving two functions, one to permit movement of the fuel supply unit to its proper position away from the mixing chamber, and two, to serve as a support and positioning means for such fuel supply unit.

Other features of this invention reside in the novel supporting frame or leg structure, which in combination with the novel design of the stove casing permits such legs to be easily folded within the general plane of the stove casing.

In the drawings:

Fig. 1 is a plan view of a collapsible stove structure constructed in accordance with the present invention.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1, and illustrating the relation of the various parts of the stove structure when in set up position.

Fig. 3 is a fragmentary sectional view of one end of the stove casing, showing the fuel supply unit and adjacent parts of the stove casing in collapsed folded position.

Fig. 4 is a side elevation of the stove structure when the same is folded up and ready to be carried, showing in particular the position of the leg members when in folded position.

Fig. 5 is a sectional view taken partly on line 5—5 of Fig. 1.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 1, and showing in particular the arcuate shield for the fuel supply tank and the manner of positioning the end wall of the stove casing when in supporting position.

Although the novel features of the stove structure of the present invention may be embodied in connection with various types of burner structure, the present embodiment is illustrated in connection with liquid fuel burners of the type having a reciprocable fuel supply unit including a generating tube.

In Figs. 1 and 2 I have illustrated a two-burner starting and generating apparatus of the general type described in the copending application of Clarence B. Overly, Serial No. 277,493, filed May 14, 1928. This burner structure comprises a mixing chamber 1 which in turn is provided with a pivoted cap 2 and is in direct communication as at 3 with a manifold 4 which leads directly to the burners 5 and 6.

A starting member 7 is preferably positioned in alignment with the mixing chamber 1 and the head of the mixing chamber 1 is apertured to receive a suitable reciprocable generating tube 8 which in turn is rigidly secured to a suitable supply tank 9. The generator tube 8 and the supply tank 9 are adapted to be moved as a unit to and from the mixing chamber. It will be obvious that the generator tube 8 is moved during the inward movement of said liquid supply tank and will be moved through the mixing chamber 1 and in contact with the valve member 2. In starting the stove, the generator tube is adapted to be moved through the mixing chamber 1 to first raise the valve member 2 and then take a position adjacent the end of the member 7 whereby vaporized fuel issuing from the jet block of the generator tube will strike the deflector member 7 and will be directed in the form of a blast of flame back against the generator tube 8 to accelerate starting thereof. Such starting position of the generating tube is best shown in Fig. 3.

As will be obvious from Fig. 1, the generator tube is adapted to be reciprocated in alignment with the two burners 5 and 6. For this purpose, the end wall of the stove casing which may be designated 10, is preferably

separate from the remainder of the casing but pivoted to the side walls thereof as at 11. This end wall of the casing 10 is provided with suitable arcuate flanges 12 which are turned inwardly at right angles to the wall 10. A suitable bar 13 is adapted to extend across the end of the casing above the pivoted wall 10. This bar serves as a reinforcing member and also serves as a pivot for one end of the cover as shown at 14 in Fig. 1.

One end of each arcuate flange 12 is provided with a suitable laterally extending member 15 which is adapted to contact with the cross bar 13 when said end wall is lowered to the position shown in Fig. 3. When the portions 15 of the flanges 12 strike the cross bar 13 the end wall 10 of the casing will be positioned in alignment with a portion 16 of the bottom of the casing.

The slidable fuel supply unit consisting of the generator tube 8 and tank 9 is adapted to be guided and positioned by the end wall 10 when moved to the position shown in Fig. 2. As best shown in Figs. 1 and 6 the end wall 10 is provided with a centrally positioned groove or guideway 17, and the tank 9 is preferably provided with a member 18 which is preferably of the approximate width of the guideway 17 and adapted to be guided thereby.

The bottom of the stove casing is inwardly depressed or formed whereby to provide a bottom wall 19 which is higher than the bottom 16. One end of the side wall formed by the bottom depression is preferably formed at an angle as indicated at 20 for a purpose to be later described and the distance of the wall 20 from the end of the casing is sufficient to provide room for the supply tank when moved to its collapsed position within the casing, as shown in Fig. 3. A suitable arcuately shaped shield 21 is pivotally supported by the cross bar 13 whereby the same may be positioned in two positions, one as shown in Fig. 2, and the other as shown in Fig. 3. This shield is not necessary for the successful operation of the stove, but is more or less of a precautionary nature to shield the supply tank 9 from the heat of the burners. A suitable slot 22 is formed in this shield whereby to receive the generator tube.

The correct position between the jet block of the generator tube and the entrance head of the mixing chamber is approximately that shown in Fig. 2, and to maintain this position the end wall 10 is preferably provided with a suitable positioning pin 23 which is adapted to register with a suitable aperture 24 in the guide 18. The end of the guide 18 is preferably upturned and the fuel tank 9 and generator tube is freely moved outwardly as a unit so that the guide 18 will ride upon the pin 23 whereby to permit registration of the aperture 24 therewith.

It will be understood that the fuel supply unit is freely movable and that the entrance head of the mixing chamber serves only as a guide for the generating tube. When the fuel supply unit is moved outwardly towards the position shown in Fig. 1, such unit may be bodily lifted so as to easily cause cooperation between the pin 23 and aperture 24. The bottom wall 16 of the stove casing is provided with another pin 25 which is positioned centrally of the casing and is adapted to contact with the end of the guide 18 when the fuel supply unit is moved within the casing to starting or collapsed position.

When the fuel supply unit is moved inwardly to starting position the contact between the guide 18 and the pin 25 will insure the correct positioning between the end of the generator 8 and the deflector or starting member 7. There is no guideway formed in the bottom 16 of the casing, as this is not necessary.

The pivoted top of the casing may be generally designated 26 and such top is preferably provided with three inwardly extending flanges, two at the ends as at 27 and 28, and the other at the front as at 29. The flange 28, which is adapted to extend parallel with the bar 13 when such cover is closed, is so spaced from such bar 13 that when the end wall 10 is moved to the position shown in Fig. 3, the flange 28 will be on the outside of the upper edge of said plate 10. In other words, when the plate 10 has been moved to the position shown in Fig. 3 the downward movement of the top 26 to close the case will cause the flange 28 to fall to the outside of the end plate 10 and thus clamp the same in assembled position.

The bottom of the casing is preferably provided with the openings 30 and 31, as best shown in Fig. 1, whereby to receive the end portions 15 of the flanges 12 when the end wall is moved to its collapsed position, as shown in Fig. 3. The ends 15 of the flanges 12 are slightly bent as shown in Figs. 4 and 6 so as not to conflict with the leg members.

The top 26 is preferably pivoted to the casing by means of the flanges 27 and 28, the flange 27 being connected at its inner end to the permanent end wall of the stove casing, and the flange 28 being pivoted at its inner end to the cross bar 13. By this arrangement, the back edge 32 of the top 26 may be positioned very close to the back wall 33 of the stove casing whereby when the back edge 32 contacts with the wall 33 it will serve as a stop so as to support the top 26 in an open position. One corner 34 of the end wall 10 is cut away so as to provide for the pivot between the flange 28 and the bar 13.

As the generating and burner structure is not as high as the fuel supply unit, which comprises the tank 9 of the generator 8, the bottom of the stove casing is recessed as previously described. One end of the bot-

tom of the casing, which is not recessed, is of such size, as shown in Fig. 3, to serve as a chamber for receiving the tank 9 when the same is moved to collapsed position. The other end wall of the depressed portion of the bottom of the casing and designated 35 is preferably formed at the same angle as the end wall 20. This end wall 35 is spaced from the end wall of the stove casing but this spacing is not for the reception of any article but merely to so locate the wall 35 as to position the leg members.

As best shown in Fig. 4 the stove is provided with two leg members which may be designated 36 and 37, and each comprising off-set portions to form spaced contact members 38 and 39. The inturned leg portions of each member 36 and 37 are riveted as at 40 and 41 to the front and back walls of the stove casing. The riveting or securing of the leg members to the walls of the casing is such as to produce friction between the in-turned portions of the leg members and the walls of the casing.

The bottom edge of the front and back walls of the casing are inturned as at 42 and 43, such inturned edges being positioned below the normal collapsed position of the leg members, as best shown in Figs. 3 and 5, to serve as friction retainers for the leg members so as to normally retain them in folded position. The friction produced by the riveting or securing of the leg members is preferably sufficient to keep the same in collapsed position such as shown in Fig. 3 and the inturned portions 42 and 43 serve as additional friction members and prevent accidental unfolding of the leg members.

In order to set up the stove, the leg members 36 and 37 may be moved to the position shown in Fig. 2 whereby they will contact with the walls 20 and 35 which serve as stops for positioning the leg members, the inturned portions 42 and 43 also assisting to frictionally maintain the legs in their adjusted position. It will thus be seen that I have provided a novel stove casing which may be completely collapsed and folded up and the leg members of which are not only designed to be folded within the confines of the casing but which are also extremely simple and compact in design and operation.

The pivoted top member 26 is provided with two plates or shields 45 and 46 which are hinged to the top 26 by means of suitable hinge members 47 which are preferably spot welded to the top as best shown in Fig. 2. When the shields 45 and 46 are not used the top 28 sets farther back than in the normal position shown in Fig. 6. When the shields are used, the top 28 will preferably be held approximately vertical and will be supported in such position by the contact between the shields and the stove casing.

What I claim is:

1. A stove structure, comprising a casing, a burner structure of the two-burner type positioned within the casing, a fuel supply unit comprising a tank and a generator tube secured thereto, said generator tube being slidable longitudinally relative to one of said burners, one wall of said casing being movable to a position substantially in alignment with the bottom of the casing to receive and support said unit.

2. A stove structure, comprising a casing, a burner structure of the two-burner type positioned within the casing, a fuel supply unit comprising a tank and a generator tube secured thereto, said generator tube being slidable longitudinally relative to one of said burners, one wall of said casing being movable to a position substantially parallel with the bottom of the casing to receive said fuel supply unit, and a groove formed in said movable wall for cooperating with a portion of said fuel supply unit for guiding the same.

3. A stove structure, comprising a casing, a burner structure of the two-burner type positioned within the casing, a fuel supply unit comprising a tank and a generator tube secured thereto, said generator tube being slidable longitudinally relative to one of said burners, one wall of said casing being movable to a position substantially parallel with the bottom of the casing to receive said fuel supply unit and means on said movable wall for cooperating with a portion of the fuel supply unit to position the generator tube relative to the burner.

4. Stove construction, comprising a casing, burner structure positioned therein including a mixing chamber and a preheating member, a fuel supply unit including a tank and a generator tube, said generator tube being movable relative to said mixing chamber and said preheating member whereby to cooperate with said preheating member for starting and with said mixing chamber for normal operation, a portion of said casing being movable outwardly to a position approximately at right angles to its normal position, said fuel supply unit being positioned completely within the stove casing in one position and being supported by said movable portion of the casing when in normal operating position.

5. Stove construction, comprising a casing, burner structure positioned therein including a mixing chamber and a preheating member, a fuel supply unit including a tank and a generator tube, said generator tube being movable relative to said mixing chamber and said preheating member whereby to cooperate with said preheating member for starting and with said mixing chamber for normal operation, a portion of said casing being movable outwardly to a position approximately at right angles to its normal position, said fuel supply unit being positioned

and supported by said movable portion of the casing when in normal operating position, said movable portion of the casing being provided with flanges having offset portions adapted to contact with a portion of the casing whereby to position said movable wall to receive and support said fuel supply unit.

6. Stove construction, comprising a casing, burner structure positioned therein, a fuel supply unit comprising a tank and generator tube, said generator tube being movable relative to the burner whereby the supply unit may be moved inwardly to starting position and outwardly to normal operating position, an end wall of said casing being movable outwardly to a position substantially in alignment with a portion of the bottom of the casing whereby to receive and support said fuel supply unit when in normal operating position.

7. Stove construction comprising a casing, burner structure positioned therein, a fuel supply unit comprising a tank and generator tube, said generator tube being movable relative to the burner whereby the supply unit may be moved completely within the casing when in collapsed position and exteriorly of the casing when in normal operating position, an end wall of said casing being movable outwardly to a position substantially in alignment with a portion of the bottom of the casing whereby to receive and support said fuel supply unit when in normal operating position, and means forming a part of said casing and cooperating with said fuel supply unit for positively positioning the same in two separate positions.

8. Stove construction, comprising a foldable casing, burner structure mounted therein, a fuel supply unit comprising a tank and a generating tube, said unit being movable to two positions relative to said burner structure, said fuel supply unit in one of its positions being completely positioned within the folded up casing, one wall of said casing being pivoted adjacent its bottom and being movable outwardly whereby to receive and support said fuel supply unit in its other position.

9. Stove construction, comprising a foldable casing, burner structure mounted therein, a fuel supply unit comprising a tank and a generating tube, said generating tube being movable to two positions relative to said burner structure, said fuel supply unit in one of its positions being completely positioned within the folded up casing, one wall of said casing being movable outwardly whereby to receive and support said fuel supply unit in its other position, said casing being provided with a cover having a flange adapted to cooperate with and position said movable casing wall in normal folded position.

10. Stove construction, comprising a casing, burner structure positioned therein, a movable fuel supply unit, a portion of one side wall of said casing being movable outwardly to a position for receiving and supporting said fuel supply unit, and a cover for said casing, said movable wall of the casing being held in normal folded position by said cover when the same is folded to close the casing.

11. Stove construction, comprising a casing, burner structure positioned therein, a movable fuel supply unit, one of the walls of said casing being movable for receiving and supporting said fuel supply unit, a cross bar extending across the top part of the open part of the stove casing formed by said movable wall, and a cover for said casing having flanges, said cover being pivotally mounted upon the casing by pivotal connections between one end of the casing and one flange on the cover, and between said cross bar and the other flange on the cover

12. Stove construction, comprising a casing, burner structure positioned therein, a movable fuel supply unit, one of the walls of said casing being movable for receiving and supporting said fuel supply unit, a cross bar extending across the top part of the open part of the casing formed by said movable wall, a cover for said casing having flanges, said cover being pivotally mounted upon the casing by pivotal connections between one end of the casing and one flange on the cover and between said cross bar and the other flange on the cover, said movable wall of the casing being held in normal folded position by means of the flange on said cover when said cover is moved to closed position.

13. Stove construction, comprising a casing having a recessed bottom, a burner and mixing chamber positioned on said bottom, said recessed portion having an end wall, a fuel tank movable to a position in the bottom of the casing between said end wall and a wall of said casing, leg members pivotally connected to said casing beneath said recessed bottom by a pivotal connection between the ends of the leg members and opposite walls of said casing, whereby said legs will be completely folded within said recess and one of said legs will contact with said end wall when unfolded.

14. Stove construction, comprising a casing having a recessed bottom, a burner positioned on said bottom, said recessed portion having end walls, a fuel tank adapted to be positioned in the space between one of said end walls and a wall of said casing and having a generator tube positioned above said burner, leg members pivotally connected to said casing by a pivotal connection between the ends of the leg members and opposite walls of said casing whereby said legs will be completely folded within said recess, said

legs being movable to a position outside the recess for supporting the casing and adapted to contact with the walls of said recess for limiting their outward movement.

15. Stove construction, comprising a casing, the bottom thereof being recessed, burner structure positioned on the top of said recessed portion, a fuel supply unit including a tank and generator tube, said tank being positioned between an end wall of said recess and a wall of said casing and said tube being slidable in a plane above said burner structure, and leg members pivotally mounted and foldable within said recess and movable to an outward position in contact with end walls of said recess for supporting said casing.

16. Stove construction, comprising a casing having two side walls and two end walls, the bottom of said casing being recessed between the two end walls, a burner positioned within the casing, a movable fuel supply unit including a tank, one of the end walls of said casing being movable outwardly for receiving and supporting said fuel supply unit, said fuel supply unit being movable to a position within the casing between the end wall of said recessed portion and said movable wall when folded up, and leg members positioned within said recessed portion and pivotally mounted to the said walls of said casing whereby the legs when in folded up position will be positioned between the plane of the bottom of the casing and the top thereof.

In testimony whereof I affix my signature.

JAMES IRONSIDE.