D. NEAL.

FOLDABLE STOVE.

APPLICATION FILED NOV. 6, 1920.

1,428,113. Patented Sept. 5, 1922.

2 SHEETS—SHEET 1.

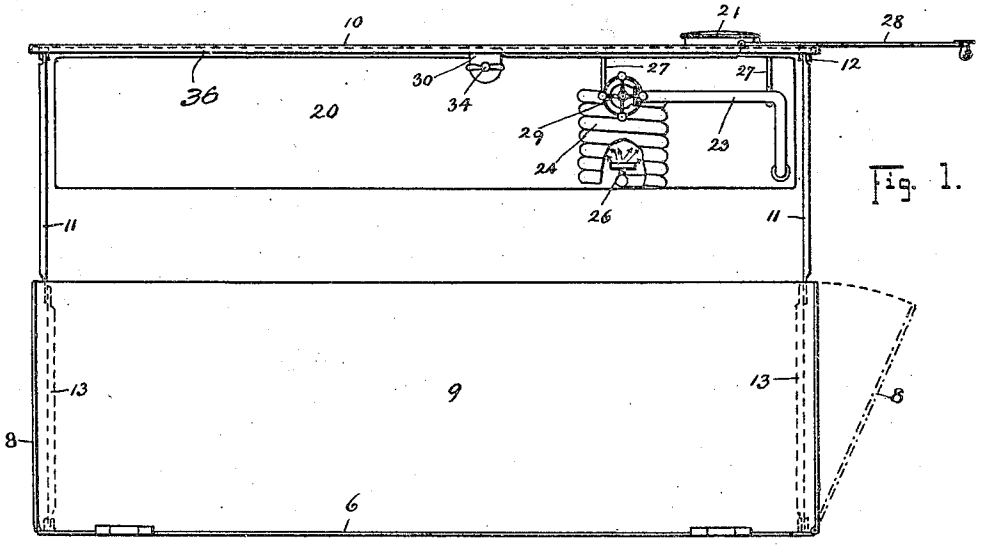


Fig. 1.

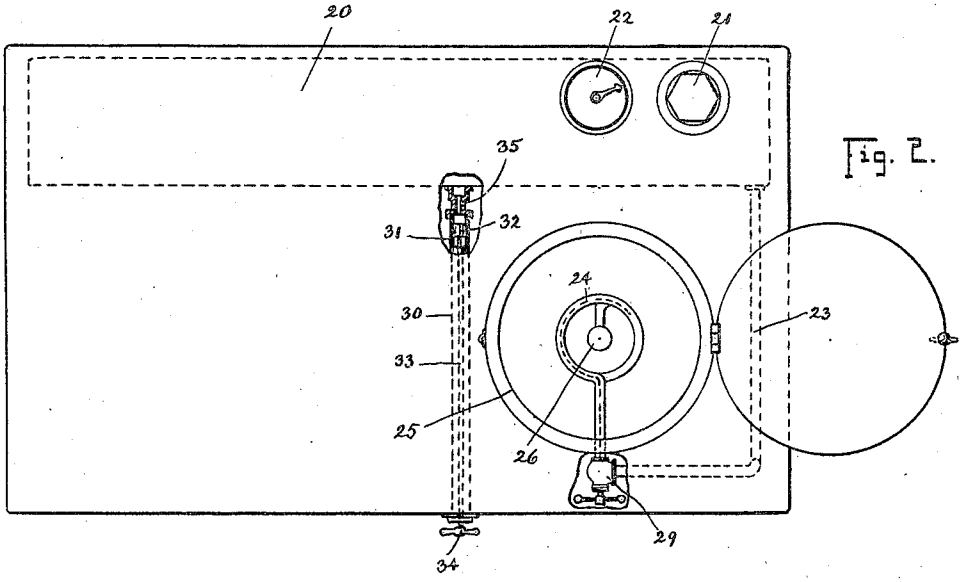


Fig. 2.

INVENTOR

Daniel Neal

BY Bruno Reichelt

ATTORNEY

D. NEAL.

FOLDABLE STOVE.

APPLICATION FILED NOV. 6, 1920.

1,428,113. Patented Sept. 5, 1922.

2 SHEETS—SHEET 2.

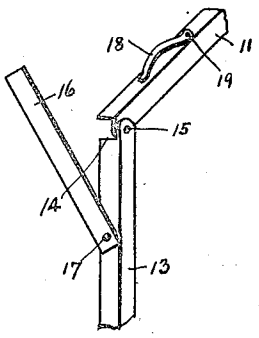


Fig. 5.

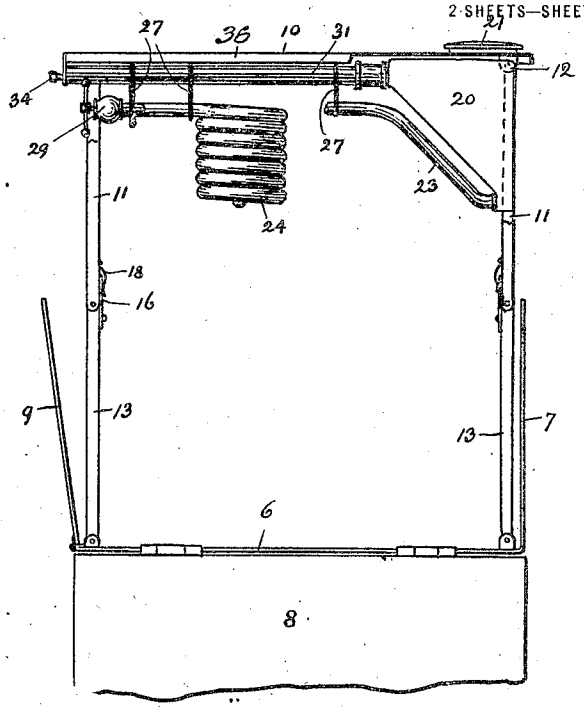


Fig. 3.

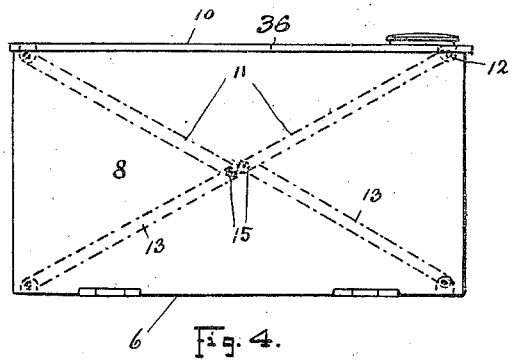


Fig. 4.

INVENTOR

Darel Neal

BY

Brumm Reichelt

ATTORNEY

Patented Sept. 5, 1922. 1,428,113

UNITED STATES PATENT OFFICE.

DAREL NEAL, OF REDONDO BEACH, CALIFORNIA.

FOLDABLE STOVE.

Application filed November 6, 1920. Serial No. 422,304.

To all whom it may concern:

Be it known that I, DAREL NEAL, a citizen of the United States, residing at Redondo Beach, in the county of Los Angeles and State of California, have invented a new and useful Foldable Stove, of which the following is a specification.

This invention relates to stoves, particularly to foldable or collapsible stoves, the primary object of the invention being to provide a stove of simple and compact form which is normally housed in such manner as to be completely covered and out of the way, but which, upon short notice and with little trouble, may be set up for use and firmly supported in proper position for cooking purposes.

A further object of the invention is to provide a stove especially adapted to camping, touring and hunting expedtions, wherein it is essential that space in packing or storing be economized and also that the articles forming a part of the paraphernalia be of light weight yet of durable construction; the stove of my invention measuring up to these essentials and in addition providing ample space for the storage of cooking utensils and other articles usually constituting part of the camping kit.

A further object is to provide novel means for supporting the stove in "set up" position; the said means additionally serving to house the stove when the latter is collapsed.

Further objects reside in the novel means employed for associating the fuel tank with the stove structure; means for feeding the fuel to the burner under pressure; means for heating the fuel prior to its entrance to the burner; and the means for holding the stove casing or housing sides in closed position.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, all as will appear more fully hereinafter, illustrated in the accompanying drawings, and particularly pointed out in the claims.

In the drawings:—

Fig. 1 is a front elevation of a foldable or collapsible stove constructed in accordance with the invention, the view showing the stove as it will appear in extended or "set up" position for use,

Fig. 2 is a top plan view of the improved stove, parts being broken away.

Fig. 3 is an end elevation of the stove,

Fig. 4 is an end view of the stove as it will appear in collapsed or folded condition for shipment or storage, and

Fig. 5 is a detail perspective view showing the manner of connecting and locking the supporting elemnts of the stove body in upright position.

Referring now more particularly to the drawings, 6 indicates a bed or base for the stove proper; the said base in the present instance comprising a metal plate of suitable thickness and of rectangular shape. This plate is provided at its rear longitudinal edge with an upstanding wall, this wall being preferably fixed to the base. This fixed wall, which is indicated at 7, is coextensive with the base 6, and is disposed at right angles to the latter.

To the ends of the base and also the front edge thereof are hinged the movable wall sections: the end sections being indicated at 8 while the front section is represented at 9. The hinges of these sections are so arranged as to permit of the sections swinging upwardly or downwardly; when in the latter position resting upon the ground and acting as legs to support the base spaced above the ground, and when raised forming sides and ends for the stove container.

The stove for use in connection with this container comprises a stove plate indicated at 10, which is flat and rectangular, being of substantially the same area as the base 6. The stove plate or top has legs 11 pivoted or hinged as at 12 near the four corners thereof and to the under side of the plate. These legs are pivoted so as to swing laterally of the stove, and are of substantially the same length as the breadth of the sides and ends 7, 8 and 9 of the base. In the present instance the legs 11 are formed of angle iron, but it will be understood that any preferred type or construction of leg may be equally as well employed.

The base 6 has pivoted or hinged near the four corners thereof and to its upper surface the arms 13; the latter being hinged so as to swing inwardly of the base in the same manner as the legs of the stove plate. Furthermore, the arms 13 are formed in this instance of angle iron, similar to the said arms 11, and the arms are hingedly connected at their upper ends with the lower ends of the legs of the stove. The upper end of each arm is cut away on one side to provide a

shoulder 14 disposed inwardly from the extreme end of the arm and inwardly from the pivotal connection 15 of the leg and arm. This shoulder is to be engaged by a corresponding shoulder at the lower end of the leg, and when the arms and legs of the stove plate and the base are brought into longitudinal alinement it is obvious that the cooperating shoulders of the said arms and legs will prevent the latter moving outwardly beyond such alinement. The joint is, however, free to break so as to permit the legs and arms swinging inwardly upon their pivots, as will be understood, and as shown by dotted lines in Fig. 4 of the drawings.

In order that the pivotally connected legs and arms may be releasably held in upright or alined position, holding means of improved nature is employed. This holding means comprises an extensible member 16 for each of the connected legs and arms, and is adapted to bridge the joint of the connected legs and arms so as to hold the latter against any tendency to fold or collapse. The holding member consists, more specifically, of a latch plate 16, pivoted at its lower end as at 17 to the upper portion of the upstanding arm 13, and is of such length as when moved to operative position to overlie the pivotal connection between the leg and arm. It will be observed that the latch plate is arranged upon that side of the arm and leg as to prevent the joint between the same "breaking." The leg 11 has a spring plate or leaf 18 secured thereto as at 19, which leaf is adapted to engage the upper end of the latch plate and hold the same against movement away from the joined arm and leg.

The stove plate carries a fluid fuel tank 20, which is suitably secured thereto in any desired manner, and the tank is preferably coextensive with the length of the stove plate. The tank is narrow and lies beneath the stove plate and near the rear edge thereof, having a filling opening closed by a cap or cover 21, and being provided with an indicator 22 of conventional construction whereby the amount of fuel oil within the tank may at any time be readily determined.

A fuel conducting pipe 23 leads from the lower portion of the tank forwardly beneath the stove plate and is formed into a coil 24 disposed directly beneath the opening 25 in the said plate. The coil terminates at its lower end in a burner 26; the latter being disposed within the coil so that heat and flame emanating therefrom will come into direct contact with the coil pipes so as to heat the fluid fuel therein prior to its entry to the burner. The fuel pipe and the coil are held firmly in proper position by the brackets 27 depending from the stove plate. The opening 25 in the plate may be closed, when desired, by the lid or cover 28, the latter being hinged to the stove plate as shown.

A fluid fuel control valve 29 is located in the fuel pipe at a suitable place. This valve may be of the usual well known construction, being of the needle valve type so that the flow of fuel gas to the burner may be minutely regulated. In the drawings I have shown the use of a wick in the fuel pipe extending from the valve a short distance into the coil, and the purpose of this wick is to absorb or detain any impurities which might be present in the fuel oil, thereby preventing such impurities entering the burner.

Associated with the fuel tank is a pressure pump 30. This pump includes the cylinder 31 in communication at its inner end with the interior of the tank above the liquid level therein; a piston or plunger 32 within the cylinder; a piston or plunger rod 33 connected to the plunger and extending to the exterior of the cylinder and having a hand grip 34 thereon; and the check valve 35 near the inner end of the cylinder. This check valve may be a ball valve or an ordinary flap valve, and is arranged so as to open and admit air to the tank when the plunger is moved inwardly but to close when the plunger is pulled out.

The stove plate is provided at its edges with a depending flange 36 which, when the stove is in folded or collapsed position, overlies the upper edges of the fixed and hinged walls of the stove container.

When not in use, or when packed away or in transit, the stove will assume the position shown in Fig. 4 of the drawings. When so positioned, the stove plate will rest upon the upper edges of the hinged and fixed walls, and the flange 36 will hold the movable walls in proper upright position. In use, the stove lid or plate is raised, upward movement of the plate causing the folded legs and arms to straighten or move into alinement with each other. When fully raised, the latch plates are moved so that the free ends thereof are engaged beneath the lower ends of the holding springs, and the raised structure is thus firmly supported. The cover or lid for the stove opening may then be swung back so as to uncover the opening, and the stove is ready for cooking operations. The air pump is operated a few times to provide sufficient pressure in the tank to cause fuel oil under pressure to pass through the oil pipe, into the coil and to the burner. The burner is preferably provided with one or more small openings, so that the fuel oil will pass therefrom in a small stream. When the oil is ignited, the flame and the heat emanating therefrom will come in contact with the coils and the oil in the latter will become heated. This renders the oil more volatile and a gas is produced, thereby greatly economizing the fuel.

With a stove constructed in accordance with the foregoing, it will be seen that the general and specific objects set forth are adequately accomplished. While, however, the above is a description of the invention in its preferred embodiment, it will be understood that I am not to be limited to the precise details and arrangement set forth by way of illustration, as variations in such arrangements may be liberally made without departing from the invention as defined by the claims.

I claim:

1. In a collapsible stove, a base having a rigid and a hinged end wall and hinged side walls, arms hinged at their lower ends to said base in spaced relation, a stove plate, a heating element carried by said plate, legs hinged to said plate and hingedly connected to the upper ends of said arms, and means for releasably holding the said arms and legs in alinement, said stove plate adaped to rest on the free edge of said walls when in collapsed position.

2. In a collapsible stove, a base having a rigid and a hinged end wall and hinged side walls, arms hinged at their lower ends in spaced relation upon said base, the said arms adapted to fold downwardly toward said base, a stove plate, a heating element carried by said plate, legs depending from said plate and hinged to the latter, the lower end of each leg being pivotally connected with one of said arms, and means for holding the said connected arms and legs in alinment with each other, said stove plate adapted to rest on the free edge of said walls when in collapsed position.

3. In a collapsible stove, a base, arms arranged in pairs in spaced relation to each other and pivoted to said base, the said arms of each pair being adapted to swing downwardly toward each other, a stove plate, a heating element carried by said plate, legs arranged in pairs in spaced relation to each other and pivoted to said plate, the said legs of each pair adapted to swing upwardly beneath said plate and toward each other, the points of connection of said legs with the plate being directly above the points of connection of the arms with the base, means limiting the downward movement of the stove plate including a rigid end and a hinged end wall and hinged side walls secured to said base, and means for holding the said legs and arms in alinement with each other.

4. In a collapsible stove, a base, a stove plate and heating element carried by said plate movable bodily toward or away from said base, collapsible members connecting said plate and said base, end walls one of which is rigidly fixed to said base and limiting the downward movement of said plate, and side walls hinged to said base and adapted when raised to support the said plate when the latter is lowered.

5. In a collapsible stove, a base, a wall secured to one edge of said base and extending upwardly therefrom, a stove plate of substantially the same length and breadth as said base, a heating element carried by said plate, collapsible members connecting the base and plate, walls hinged to certain of the edges of said base and adapted to be raised to upright position, the said plate adapted to be lowered so as to rest upon the upper edges of said walls, and a flange depending from the edges of said stove and adapted to overhang the said wall edges.

In testimony whereof I hereunto affix my signature this 8th day of Oct., 1920.

DAREL NEAL.