

July 7, 1925.

1,544,651

F. G. KLINERT

PORTABLE CAMP STOVE

Filed Nov. 25, 1924

2 Sheets-Sheet 1

FIG. 1.

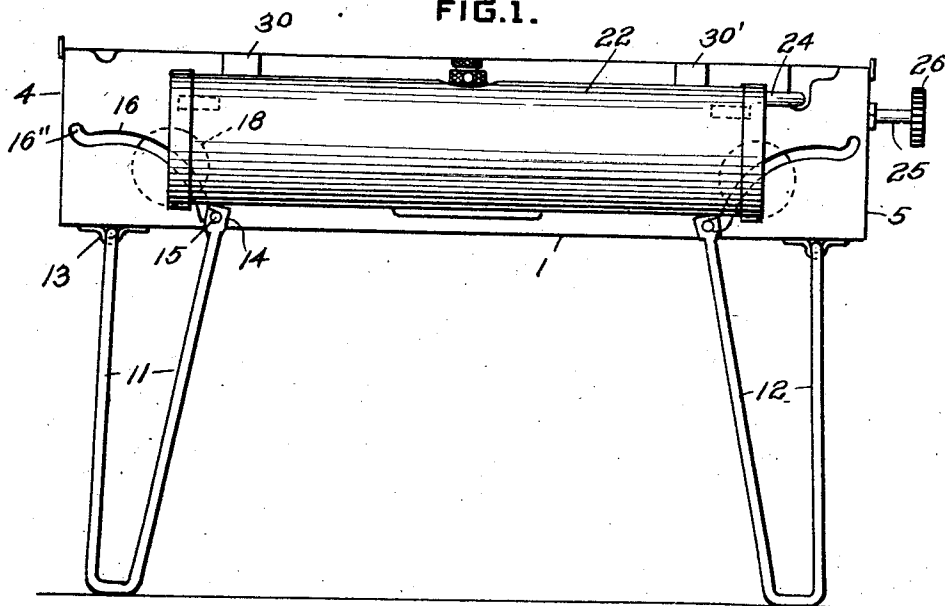
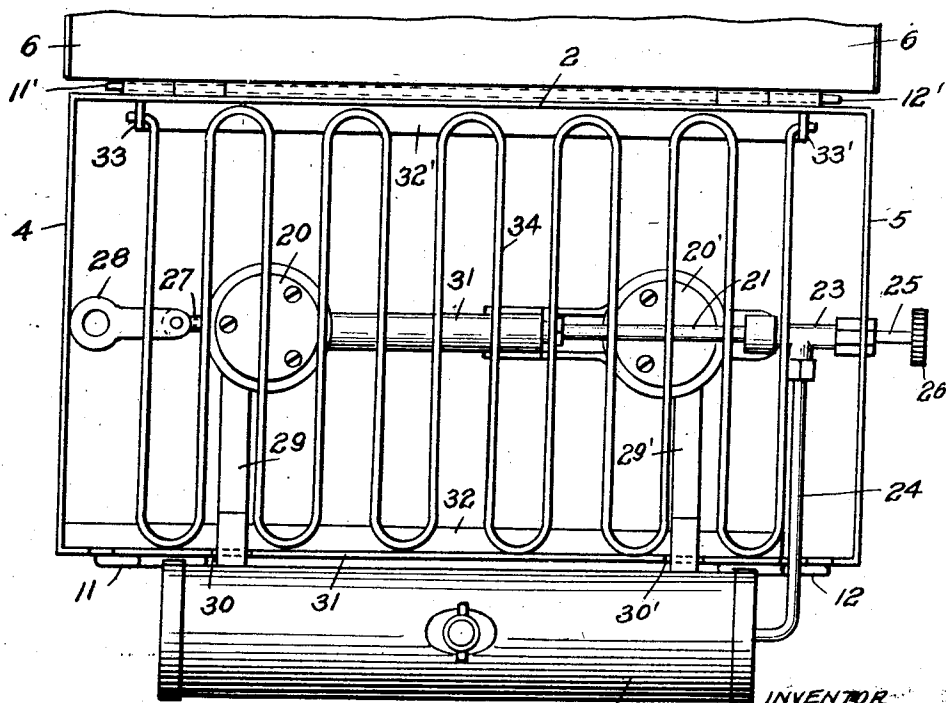


FIG. 2.



WITNESSES

J. Robert Bradley
Ch. Halbur

INVENTOR

Fred G. Klinert
By Hunter, Brown & Crittenden
His Atty.

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FIG. 3.

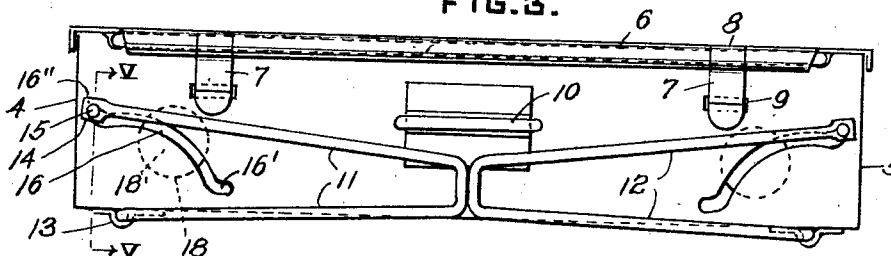


FIG. 4.

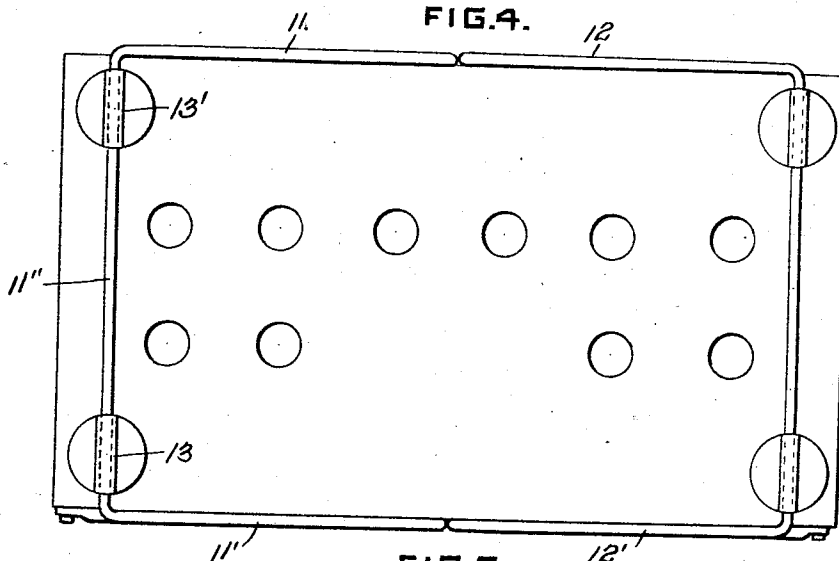


FIG. 6.

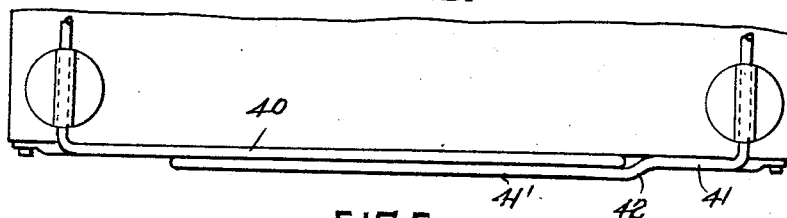
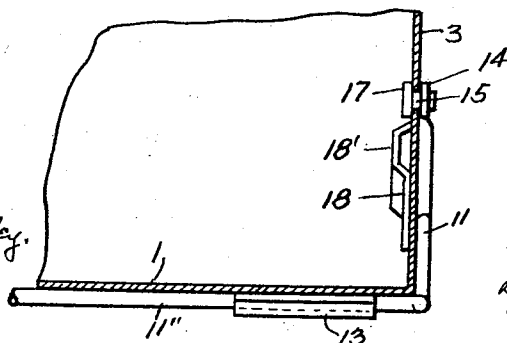


FIG. 5.



WITNESSES
J. H. H. Bradley.
C. P. Hallen.

INVENTOR
Fred G. Klinert
By [Signature], [Signature]
His Atty.

Patented July 7, 1925.

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UNITED STATES PATENT OFFICE.

FRED G. KLINERT, OF DULUTH, MINNESOTA, ASSIGNOR TO HUGO MANUFACTURING COMPANY, OF WEST DULUTH, MINNESOTA, A CORPORATION OF MINNESOTA.

PORTABLE CAMP STOVE.

Application filed November 25, 1924. Serial No. 752,140.

To all whom it may concern:

Be it known that I, FRED G. KLINERT, a citizen of the United States, and a resident of Duluth, in the county of St. Louis and State of Minnesota, have invented a new and useful Improvement in Portable Camp Stoves, of which the following is a specification.

This invention relates generally to portable stoves, and particularly to a stove of this character especially adapted for tourists, campers and others requiring stoves which can be readily packed in a compact, convenient and safe form during transportation, and which can be quickly set up for use whenever desired.

It is an object of the invention to provide a portable stove which is extremely compact, sturdy in construction, easily manipulated, and which can be manufactured at a reasonable cost.

It is a special object to provide a stove of this character in which the legs therefor while adapted to rigidly support the stove when in its set-up condition, may nevertheless be swung so as to embrace the sides of the casing and occupy the minimum space when not in use.

It is also a special object to provide such leg structure which can be easily fabricated, and which is adapted for use in connection with stoves having casings which are intended to be supported at a substantial height.

It is still a further special object to provide a portable stove having legs which cooperate with retaining slots located at the sides of the casing in such a manner as to positively lock the legs in either their extended casing-supporting or their retracted inoperative positions, and without special attention on the part of the user, it being in addition a special object to utilize the resiliency of the material forming the legs to automatically secure such locking effect all without resort to special devices in the nature of latches, tension springs, or other auxiliary locking means.

These and other objects of the invention will more fully appear when taken in conjunction with the following description and the appended claims.

In the accompanying drawings, Fig. 1 is a front elevational view of the preferred embodiment of the invention set up for use;

Fig. 2 a top plan view of the stove with the parts in the relative positions shown in Fig. 1; Fig. 3 a front elevational view of the stove in its folded or knocked-down condition, in other words, with the several parts in position for transportation; Fig. 4 a bottom plan view illustrating in detail the method of attaching the supporting legs to the casing and the manner in which the legs embrace the side walls thereof; Fig. 5 a fragmentary sectional detail view, with parts in elevation, showing the structure of the leg terminal together with its cooperation with the retaining slot provided in the side wall of the casing; and Fig. 6 a fragmentary bottom plan view illustrating a modified form of leg construction.

Referring to the drawings, the stove casing is preferably in the form illustrated, being rectangular in shape and resembling generally an ordinary suitcase. It may be constructed of sheet metal having a baked enamel coating and includes a bottom 1, side walls 2 and 3, end walls 4 and 5, and a lid 6, preferably hinged to the upper edge of the side wall 2. In order to lock the lid 6 in its closed position, a plurality of latches 7, pivoted to the forward edge of the lid as at 8, are provided. These latches preferably consist of pieces of sheet metal bent upon themselves adjacent the free extremity thereof, which bent or folded terminals are adapted to project through and interlock with suitable openings 9 provided in the front side wall of the casing, all as clearly shown in Fig. 3 of the drawings. In order that the entire stove structure may be readily carried when in its folded or knocked-down condition, the front side wall may also be equipped with the bent wire handle indicated at 10.

In the form illustrated, the casing is equipped with four supporting legs designated by the reference numerals 11, 11', 12 and 12', respectively, one being positioned at each corner of the casing.

The supporting legs are preferably arranged in pairs, and as illustrated in the drawings, the legs 11 and 11' constitute one pair, while the legs 12 and 12' constitute the remaining pair. Preferably, each pair of legs constitutes a unitary structure fabricated from a single flexible rod of resilient material, formed by suitably bending the rod to the necessary shape. In other words,

the pair of legs 11, 11' are formed by angularly bending the ends of a rod of flexible material and then folding these ends upon themselves until they assume the shape clearly illustrated in Figs. 1 and 3 of the drawings. The intermediate portion of this rod, disposed between the leg portions 11 and 11', is designated at 11''. The distance between the legs 11 and 11', is sufficient to enable the legs to embrace and lie closely adjacent the opposite vertical side walls of the casing when swung to the inoperative non-supporting position shown in Fig. 3. The legs may be pivotally attached to the casing in any suitable manner, one convenient method being to thread the intermediate portion 11'' through spaced eyelets such as shown at 13, 13' attached to the bottom of the casing. The extremity of the rod from which the legs are formed is flattened for a short distance to form a perforated terminal 14 in which is anchored a headed projection or finger 15 adapted to project through and ride in an arcuate retaining slot 16 formed in the adjacent vertical side wall of the casing. The head 17 of the projection or finger 15 lies upon the interior face of the side wall, and is of sufficient dimensions to prevent withdrawal of the finger through the slot.

The slot 16 is arcuate in shape and concentric with the axes of the eyelets 13, 13', serving to pivotally support the legs. The opposite extremities of the slot 16 are in the form of off-set portions 16', 16'', respectively, these offset portions extending generally in the direction of the planes of the bottom and end walls of the casing, respectively. In order to serve the double purpose of strengthening the side wall in the region of the slot, and as a protective guard plate, a disk 18, having an intermediate off-set portion 18' overlying the slot, is rigidly attached to the inner face of the side wall. Each corner of both the front and rear vertical side walls of the casing is provided with an arcuate slot of the character just described, said slot being adapted to cooperate with a terminal of one of the four supporting legs. Since the details of construction of each of the retaining slots as well as the construction of the several legs are identical, except as to the relative disposition thereof, further detailed description of these parts would serve no useful purpose, the entire structure and mode of operation being obvious from the showing in the drawings.

As is usual in stoves of this character, the stove includes one or more burner jets, a vapor generator and a fuel supply tank, these several elements being preferably united into a unitary structure movable from a position entirely within the casing to a position with the tank disposed upon

the exterior of the casing when the stove is in use. In the embodiment illustrated, there are two burners 20, 20', a single vapor generating tube 21 arranged above the burner 20', and a fuel supply tank 22, operatively connected with the valve control mechanism 23 for the burner 20' by means of a pipe 24. The valve mechanism 23 is controlled by means of a stem 25, the extremity of which is equipped with the knob 26. Likewise, the valve mechanism for the burner 20 is controlled by means of the stem 27 the outer end of which has pivoted thereto the key 28. The tank 22 is rigidly connected to the remaining portions by means of a pair of straps 29, 29', which are adapted to engage the respective notches 30, 30', formed in the upper edges of the side wall 3, when the burner structure is positioned for use, as illustrated in Figs. 1 and 2 of the drawings. The burner structure is also equipped with the usual mixing tube and pipes for conveying the fuel mixture to the burners, indicated generally by the reference numeral 31.

The side walls 2 and 3 of the casing are equipped with the inwardly projecting ledges 32, 32', the latter having the upturned perforated terminal ears 33, 33', which are adapted to receive the terminals of a flexible wire grid 34, thus serving as a convenient means for pivotally mounting and supporting the grid within the casing, as well as providing means for permitting its bodily removal from the casing whenever desired.

The entire burner structure may be bodily moved from its inoperative position in which the same is located within the space below the grid 37 to its operative position with the tank disposed upon the exterior of the casing, as illustrated in Figs. 1 and 3.

With the entire burner structure within the interior of the casing, and the grid resting upon the ledges 32, 32', the lid 6 may be swung to its closed position and locked by means of the latches 7, in the manner previously explained. With these parts thus arranged, and the supporting legs 11, 11', 12, 12' swung to a position to embrace the casing, as shown in Fig. 3, the stove is in its knocked-down condition ready for transportation. With the legs in their folded condition, the fingers 15 lie opposite the off-set portions 16'' located at one extremity of the arcuate slots, and are snapped into locking engagement therewith under the resiliency of the material from which the legs are made, and are consequently held in such position until subsequently released by springing the limbs of the legs toward each other.

Whenever it is desired to set up the stove for use, the limbs of the legs are sprung towards each other sufficiently to disengage the finger or projection 15 from the off-set

16'', when the leg may be swung bodily around its pivotal connection with the casing until it assumes the position shown in Fig. 1 of the drawings. As soon as the finger 15 reaches the off-set 16', it snaps thereinto under the resiliency of the legs thus positively locking it in its casing-supporting position until subsequently released by again forcibly springing the limbs of the leg together, in a manner similar to that described in releasing the finger from the off-set 16''. Since the legs 11 and 11', constituting one pair, form a single unit with the intermediate portion 11'' of the flexible resilient rod from which they are formed, it is understood that the terminals of opposite legs of a pair are released from their retaining slots simultaneously, and swung as a unit from the position shown in Fig. 3 to that shown in Fig. 1 of the drawings, and that the legs 12, 12' constituting the remaining pair, are likewise adjusted from their inoperative to their casing-supporting positions.

In the embodiment illustrated in Figs. 1 to 4, the lengths of the legs 11, 12, and 11', 12' of the two pairs, are such that the juncture of the limbs of the legs at either side of the casing merely lie in juxtaposition when brought to their inoperative folded condition. In some instances it has been found desirable to support the stove casing at a height greater than is afforded by the arrangement shown in Figs. 1 to 4. In this event, the supporting legs are made of considerably greater length, and are arranged so that the leg of one pair overlaps the contiguous leg of the remaining pair throughout a portion of its length. Such modified construction is illustrated in Fig. 6 of the drawings. In this figure, leg 40 of one pair lies closely adjacent the side wall of the casing throughout its entire extent, while the contiguous leg 41 of the remaining pair is off-set as at 42 so that the portion 41' therebeyond is adapted to overlie the leg 40, in the manner clearly shown in this figure.

It is thus seen that the invention provides a portable stove which while adapted to firmly support the casing at a considerable elevation, nevertheless may be quickly and easily folded or knocked down so as to occupy but a very limited space, that the supporting leg structure may be fabricated at a very low cost, and that the cooperation between the leg structure and the arcuate retaining slots provided in the casing walls serves to automatically lock the supporting legs in both their inoperative folded condition as well as their casing-supporting position under the influence of the resiliency of the legs themselves and without any special effort on the part of the user.

In accordance with the requirements of the patent statutes, the principle and mode

of operation of the preferred embodiment of the invention has been illustrated and described, but it is obvious that many changes in details and arrangements may be made without departing from the spirit of the invention. It is therefore not intended to limit the invention beyond that particularly defined by the appended claims.

I claim:

1. A portable stove comprising a casing provided with vertical side walls, supporting legs pivoted to the casing adapted to normally lie closely adjacent the said side walls when not in use and to be swung therefrom to casing supporting position, the side walls having arcuate retaining slots provided with spaced off-set portions formed therein, and a projection carried by each of the legs riding in one of the said slots.

2. A portable stove comprising a casing provided with vertical side walls, supporting legs pivoted to the casing, each of said legs including a flexible rod adapted to lie closely adjacent one of the side walls when not in use and to be swung on its pivot away from the side walls into casing supporting position, the side walls having arcuate retaining slots formed therein equipped with eccentrically disposed off-set portions, and a finger rigidly carried by the rod projecting through the said slot.

3. A portable stove comprising a casing having vertical side walls provided with elongated arcuate retaining slots having eccentrically disposed off-sets at its extremities, supporting legs pivoted to said casing including portions which normally lie closely adjacent the side walls when not in use and adapted to be swung therefrom into casing-supporting position, said portions being formed of flexible material, a projection carried by each of said portions riding in one of said slots, said projections being urged into locking engagement with said off-sets under the resiliency of said portions of the legs.

4. A portable stove comprising a casing having vertical side walls provided with arcuate retaining slots with off-set portions formed therein, supporting means including a rod having an intermediate portion and angularly extending ends forming legs, the said intermediate portion being pivotally attached to the casing and the said legs being adapted to lie closely adjacent whereby to embrace the opposite side walls when swung to inoperative position, the terminals of said legs being provided with fingers riding in said slots.

5. A portable stove comprising a casing having vertical side walls provided with arcuate retaining slots with eccentrically off-set portions formed at their extremities, supporting means including a resilient rod of flexible material having an intermediate por-

tion and angularly extending ends forming legs, the said intermediate portion being pivotally attached to the casing and the said legs being adapted to embrace opposite side walls of the casing when swung to inoperative non-supporting position, the terminals of said legs being equipped with laterally projecting fingers extending through said slots, said fingers being urged into locking engagement with the off-set portions of the slots under the resiliency of the legs.

6. A portable stove comprising a casing having a bottom and vertical side walls, each side wall being provided with an arcuate retaining slot with off-set portions formed at its extremities, the off-set portions at opposite ends of the slot extending generally in the direction of the plane of the bottom and side walls, respectively, supporting legs

pivoted to the casing, each of the supporting legs being formed of a resilient flexible rod bent upon itself, the pivotal point of each leg being concentric with an arcuate slot, the legs being adapted to be swung around their pivotal connections so as to lie closely adjacent a side wall when in inoperative non-supporting position, a headed projection fixed to the terminal of each leg extending through one of the slots with the head thereof upon the interior of the side wall, said projection being adapted to be snapped into the off-set portions of the slot under the resiliency of the leg, engagement with the opposite off-set portions of a slot locking the legs in inoperative and casing supporting positions, respectively.

In testimony whereof, I sign my name.

FRED G. KLINERT.