This invention relates to new and useful improvements in stoves and the primary object of the present invention is to provide a cooking stove for campers and the like so designed as to concentrate the greatest amount of heat radiated therefrom at the top or grill carried by the same and reduce the amount of heat radiated laterally whereby a user may be positioned relatively close to the stove during high weather temperatures without effecting appreciable discomfort.

Another important object of the present invention is to provide a stove in which comminuted fuel is tamped about novel and improved fine flow in the drawings in which, when withdrawn, prior to firing of the fuel, will provide air passages in the fuel without the necessity of having to employ flue pipes or the like.

A further object of the present invention is to provide a stove applicable for burning fuel not suitable for open hearths and which includes novel and improved means for controlling the passage of air into the flue forming openings that are provided in the fuel therein.

A still further aim of the present invention is to provide a stove that is simple and practical in construction, small and compact in structure, neat and attractive in appearance, efficient in operation, strong and reliable in use, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a longitudinal vertical sectional view of the present stove showing the fuel tamped therein and the flue forming members in position to the same;

Figure 2 is a transverse horizontal sectional view taken substantially on the plane of section line 2—2 of Figure 1;

Figure 3 is a perspective view of the present stove showing the flue forming members in position thereto and

Figure 4 is a perspective view of the horizontal flue forming member and damper used in conjunction with the present invention.

Reference to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a substantially frusto-conical burner or combustion chamber having a reduced lower or minor end 12 and an enlarged upper or major end 14.

Fixed by rivets or the like 16 to the inner periphery of the burner chamber 10, adjacent the lower end 12 thereof, is the annular flanged portion 18 of a circular bottom wall 20 having a central air admitting opening 22.

Frictionally embracing the major end 14 of the burner chamber 10, is the annular flanged portion 24 of a grill or foraminous closure 26 which is provided with a centrally disposed guide sleeve 28 that slidably supports the enlarged end portion 30 of a vertical opening forming frusto-conical rod or member 32. The reduced end portion 34 of the vertical opening forming member 32 extends through the central opening 22 provided in the bottom wall 20 to seal the same when the burner chamber 10 is not in use.

Removably positioned in an aperture 36 formed in the burner chamber 10, is a horizontal opening forming rod or damper member 38 having a flattened end portion 40 that slidably engages a transverse slot 42 provided in the reduced end portion 34 of the vertical opening forming member 32. It should be noted, that the longitudinal axis of the vertical opening forming member 32 is disposed at right angles to the longitudinal axis of the horizontal opening forming member 38.

Extending inwardly from the inner periphery of the burner chamber 10 from an opening 44 formed therein, is a support sleeve 46 that removably supports the horizontal opening forming member 38 during certain instances.

In practical use of the present stove, the vertical opening forming member 32 is inserted through the air admitting opening 22 in the bottom wall 20. Horizontal opening forming member 32 is then inserted through opening or aperture 36 so that the flattened end or tongue portion 40 thereof engages the slot 42. The fuel such as sawdust, rice hulls, straw, dung or the like is then tamped down tightly within the burner chamber 10 around the vertical and horizontal opening forming members 32 and 38 until the burner chamber has been filled to within a few inches of the upper end 14 thereof. The vertical opening forming member 32 is then withdrawn and the stove is ready for firing through the grail hole or sleeve 28.

To fire the stove, a small wood or trash fire is kindled on the preferably fireproof base (not shown) where the stove is to operate. When the small wood is blazing sufficiently, the charged
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stove is lifted and set down over this kindling fire. Air to feed this blaze enters through opening 44. A draft is established through opening 22 to the flue forming opening 48 formed in the fuel and the lining of this opening can be established by manipulating the horizontal opening forming member or draft 38 a slight rotation which will position the flattened end portion 40 from a vertical to a horizontal position and deflect entering air to a closer and more forceful contact with the fuel in the burner chamber. This flattened end portion or tongue 40 acts as an effective damper in producing faster and hotter combustion in the early stages of firing until sufficient fuel has been consumed above the opening 22 to form a hemispherical combustion chamber to be affected by position of the tongue of the damper rod or member 38. At this time, the stove will have assumed a definite level of heat output, and will maintain this for the life of the charge, providing tamping of the load has been sufficient to prevent collapse of the fuel charge and obstruction of the flue. Tight packing (essential) to prevent this and reduce smoke. The conical shape of the burner chamber helps attain this and also permits telescoping of various units for packing and shipping.

One of the principal features of the present stove is the fact that the same eliminates the necessity for constant poking, stirring and refueling which prevails with wood fires. However, in cooking, while it is evident that once food has reached a boiling or frying point, it requires very little heat to hold it at the same temperature indefinitely, it is equally true that to bring something to a boil a higher flame and output of heat is desirable. This is the justification of the alternate lower flue holes and damper. After early stages of combustion, the damper 38 will no longer continue to effect the rate of combustion as it has been noted. If a high hot flame is desirable, however, this can be attained in the following manner.

The horizontal opening forming member or damper 38 is withdrawn with a twisting motion so as not to disturb the fuel charge, and it is inserted into the opening 44 and sleeve 46. This will cut off the entrance of air into the opening 22 and subsequent admixture of air into the combustion chamber is effected above the bottom wall 20 along the flue forming opening 50 formed by space vacated by the member 38. Now, to produce a high hot flame, insert a corn cob or similarly shaped object of wood through the opening 50 and along the opening 50 into the combustion chamber. This will promptly burst into flame and continue to burn with a high hot flame and make smoke for thirty minutes if totally consumed, then the stove will automatically subside to its normal constant output of heat. By repetition, the process can be carried on indefinitely, so that the stove may be said to have two ranges of heat, a boiling range and a simmering range.

As previously described, the present stove can be fired easily and quickly with no expensive priming fuels by kindling a small pilot fire and setting down the charged stove over it. Once lit, the present stove will burn for many hours, eight to ten hours if sawdust or coffee hulls are used.

This is entirely too long a period for preparing a simple meal, but it is not practical to reduce the size of the burner chamber and fuel tapped therein, since a certain height of the stove is necessary to induce a proper draft. Thus, it is necessary to charge the stove with more fuel than in most cases will be required. However, it is noted that this excess fuel need not be wasted. At any stage in the operation of combustion, the stove can be extinguished by plugging the openings 22. The lower opening 22 can be plugged with mud, and with a stick the core of fuel around the vertical flue or opening 48 can be broken down to plug the entire opening 48. A wet newspaper or rag can be then placed over the grill top to plug it and in very little time the glowing embers in the burner chamber 10 will die from oxygen starvation. On cooling, the contents of the burner chamber will be found to consist of un Consumed fuel mixed with vegetable charcoal in various stages of oxidation. This un consumed fuel and charcoal should be mixed in with fresh fuel and used to charge the burner chamber anew. It has been found that this mixture will burn with less smoke and more heat than the original charge.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention, the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A stove comprising a burner chamber open at its upper end, a grill removablely carried by the open end of the burner chamber, means for forming a vertical opening at said outer end of the burner chamber and completely through fuel tapped in the burner chamber, and means carried by the burner chamber for controlling the entrance of air into the vertical opening formed in fuel tapped in the burner chamber, said burner chamber having a lower wall disposed intermediate the ends of said burner chamber, said lower wall having a central opening that will register with the vertical opening extending completely through the fuel, said burner chamber having an air admitting opening between its lower end and said lower wall and also having an aperture above said lower wall, said last mentioned means including a rotatable and removable damper member selectively received in said air admitting opening and said aperture and being of such a length that when placed in the aperture above the lower wall, its inner end will be over the central opening in the lower wall, while its outer end extends exteriorly of the chamber, said damper member being rotatable in the aperture in the chamber and the inner end of said damper member, which overlies the central opening in the lower wall, being so formed that said air admitting opening is partially open and restrict the central opening in the lower wall upon rotation of said damper member in said aperture.

2. A stove comprising a substantially vertical casing having an open upper end and a bottom wall spaced above its lower end, said bottom wall...
5 having a central opening, means for forming a vertical opening centrally of the casing and completely through fuel tamped in the burner chamber that will register with the central opening in said bottom wall, said casing having an upper opening disposed above the bottom wall and a lower opening below the bottom wall, and an elongated member positionable in a selected one of said openings, said member being of such a length that when placed in the upper opening in the casing, its inner end will be over the central opening in the bottom wall, while its outer end extends exteriorly of the casing, said member being rotatable in said upper opening and the inner end of said member being flattened to selectively open and restrict the central opening in said bottom wall upon rotation of said member within the upper opening.

3. The combination of claim 2, wherein said means includes a rod having a lower bifurcated end received in the central opening in said bottom wall, the inner end of said member extending through the bifurcated end of said rod when the member is received in the upper opening before removal of the rod.

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