





# UNITED STATES PATENT OFFICE.

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## BARREL-HEATER AND FEED-COOKER.

SPECIFICATION forming part of Letters Patent No. 632,160, dated August 29, 1899.

Application filed April 15, 1899. Serial No. 713,137. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. VAN ALSTYNE, a citizen of the United States, residing at Manchester, in the county of Delaware and State of Iowa, have invented certain new and useful Improvements in Barrel-Heaters and Feed-Cookers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to barrel-heaters and feed-cookers; and the primary object of the same is to rapidly heat a greater quantity of water in a barrel than has heretofore been possible by analogous structures for the purpose of mixing and cooking feed for stock and without danger of ignition of surrounding materials or devices after the heater is withdrawn from the barrel or tank.

A further object of the invention is to utilize less fuel in attaining the necessary degree of heat by having the fuel burn downwardly and direct the smoke, gases, and particles of combustion upwardly through surrounding flues, around and between which the water freely circulates and be finally carried off from the top of the heater.

The invention consists of the construction and arrangement of parts hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a barrel or receptacle, showing the improved heater held therein. Fig. 2 is a similar view of the heater shown broken away. Fig. 3 is a transverse vertical section of the heater. Fig. 4 is a horizontal section of the heater.

Referring to the drawings, wherein similar numerals are employed to indicate corresponding parts in the several views, the numeral 1 designates a barrel or receptacle of any suitable size or dimension having hooks 2 movably attached to the opposite portions of the top in diametric positions. Within said barrel or receptacle a heater 3 is adapted to be movably placed, and consists of an outer surrounding casing 4, which slightly tapers toward the bottom and preferably formed of sheet metal having a more substantial cast or other metal top 5, with a central opening 6

and a smoke-pipe collar 7 at one side. The casing 4 is made fast to the top 5, and the latter has rods 8 projecting diametrically outward therefrom for engagement with the hooks 2, connected with eyes 2<sup>a</sup>, applied either directly to the casing or to the barrel. In the latter construction the hooks also serve to hold the heater down in the barrel or receptacle. On the top 5 and in the opening 6 a closing-cover 9 is removably placed and has central draft-openings 10, controlled by a damper 11 and also provided with a handle 12. To the collar 7 about three pipe-sections are intended to be applied, so as to create the necessary draft, though these may be varied to suit different attendant conditions.

The bottom 13 of the casing 4 is closed, and below the same depends a base-flange 14, substantially continuous therewith and having apertures 15 in the same for the circulation of air under the said bottom and materially reduce the caloric at this part of the casing to prevent scorching or burning of the rest on which the device may be placed when removed from the barrel and also permit a bottom circulation of the water at this point when the heater is in the barrel.

Secured to the top 5 and alining with the wall of the opening 6 is a magazine-shell 16, which depends centrally into the casing 4. Surrounding the shell at predetermined distances apart are upper and lower annular heads 17 and 18, each of which has a series of flue-openings 19 and wherein the upper and lower ends of flues 20 are secured. The peripheries of the said heads are snugly fitted in the casing 4 to form water-tight joints, and the uppermost head forms, with the top 5 and adjacent parts of the casing and shell, an annular chamber 21 to receive the smoke and products of combustion and with which the opening surrounded by the collar 7 communicates. The lower end of the shell 16 extends below the lowermost head 18 to prevent the lower ends of the flues from becoming clogged with soot and ashes. These flues are so situated that passages are formed entirely around the same, and at a short distance above the lower head openings 22 are formed in opposite portions of the casing 4. These openings 22 permit the water to flow in and circulate



about the flues, and thereby become more rapidly and thoroughly heated to the desired degree, and the perforate plates 23 act in a measure as strainers. The provision of the

- 5 said openings also permits a greater quantity of water to be placed in the barrel without slopping or running over, as the displacement is materially reduced owing to the inlet into the casing 4.
- 10 In operation the fire is started in the heater and the magazine-shell 16 thereof filled with fuel. A sufficient or desired quantity of water is then poured into the barrel 1 and the heater placed in the same and held in
- 15 proper position by engaging the hooks 2 with the eyes 2<sup>a</sup> at the sides of the barrel. The water will now freely circulate through the openings 22 in the shell within the confinement of the heads 17 and 18 and around the flues 20.
- 20 When the water has reached a suitable degree of heat or ebullition, the hooks 2 are released from the eyes 2<sup>a</sup> and the heater withdrawn from the barrel and the feed mixed with the hot water and cooked. The water
- 25 drains out of the heater as it is taken out down to the lowermost level of the openings 22, and the water that remains in the heater below said openings will protect the flues if any fire remains in the device.
- 30 During the operation of the heater the fire burns downward toward the bottom of shell 16 and the heat and products of combustion drawn upward through the flues 20 and finally out through the smoke-flue. By this
- 35 means the heating qualities of the device are increased and a comparatively less amount of fuel is required to attain the necessary heated condition of the water than heretofore in similar devices.
- 40 The device forms a valuable acquisition to the implements of the farming class and may serve many useful purposes aside from that set forth.

To accommodate various applications, 45 changes in the proportions, dimensions, and structural details may be resorted to without departing from the nature or spirit of the invention or sacrificing any of the advantages thereof.

50 Having thus described the invention, what is claimed as new is—

1. In a feed-cooker, a heater having its upper end open, a top fitted to the open end of the heater, a barrel or receptacle adapted to
- 55 have the heater removably fitted therein, rods projecting outwardly from the said top, engaging devices at the sides of the heater and receptacle, and hooks or like fastenings mounted upon the said rods and adapted for attachment
- 60 with the engaging devices of either the

heater or the receptacle, substantially as described.

2. In a feed-cooker, a shell having openings in its sides intermediate of its ends for the ingress and egress of the water to be heated, a 65 magazine located within the shell, a top extending over and closing the space formed between the upper ends of the magazine and the shell and having a smoke-outlet, upper and lower spaced horizontal heads subdividing 70 the space between the magazine and shell into a middle and end compartments, and vertical flues located in the middle compartment and having their ends attached to and opening 75 through the said spaced heads, substantially as described.

3. In a feed-cooker, a shell, a magazine arranged within the shell, a top connecting the upper ends of the shell and magazine and having a smoke-outlet and a central opening, 80 a cover closing the central opening of the top and provided with a damper, a head located a short distance above the lower edge of the magazine and connecting the latter with the shell, a second head connecting the upper 85 portion of the magazine with the upper part of the shell, the portion of the shell between the upper and lower heads having openings for the ingress and egress of the water to be heated, and spaced vertical flues arranged 90 between the heads and connected at their ends therewith and opening therethrough, substantially as described.

4. In a feed-cooker, a shell having its lower end portion and its middle portion provided 95 with openings, a bottom located above the lower set of openings and closing the lower end of the shell, a magazine placed within the shell and having its lower end terminating a short distance from the bottom thereof, 100 a top extending over the space formed between the magazine and shell and attached to the upper end of each and provided with a smoke-outlet and a central opening, a cover fitted to the opening of the top and having a 105 damper, upper and lower spaced horizontal heads connecting the magazine with the shell at points beyond the middle set of openings in the sides of the shell, the lower head being in a plane above the lower end of the magazine, and spaced vertical flues connecting the 110 heads and opening at their ends therethrough, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. VAN ALSTYNE. [L. S.]

Witnesses:

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