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SELF CONTAINED HEATING MEANS FOR CANS AND THE LIKE

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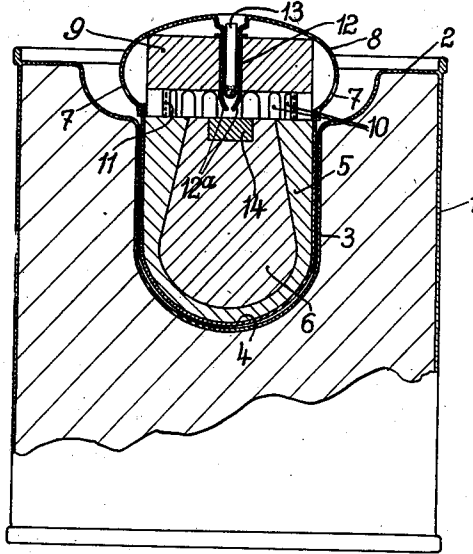


Fig. 1

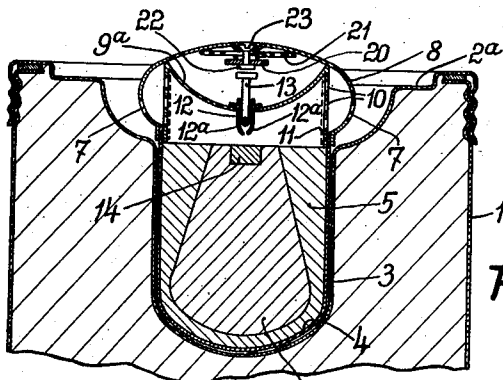


Fig. 2

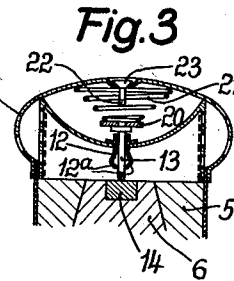


Fig. 3

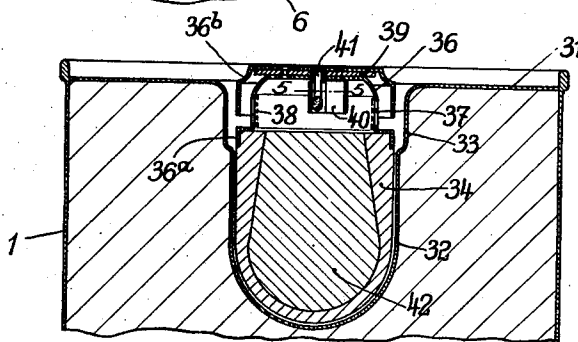


Fig. 4

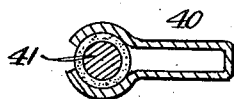


Fig. 5.

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SELF-CONTAINED HEATING MEANS FOR
CANS AND THE LIKE

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Application September 17, 1934, Serial No. 744,284
In Austria October 5, 1932

14 Claims. (Cl. 126—262)

We have filed applications in Austria on the 5th October 1932 and on the 28th July 1933, and in Germany on the 20th March 1934.

This invention relates to preserving cans of the type equipped with self-contained heating means for heating the contents before use. Cans of this nature are already known, which are double walled at the bottom for the reception of a glowing combustion cartridge of a nature to burn without any additional air supply, and in which the inner wall of the double bottom is provided with a depression into which the cartridge projects with considerable clearance, that is to say with the interposition of an air cushion between the cartridge and the wall of the depression. This air cushion tends to check the transmission of heat to the contents of the can, and at the same time constitutes a danger to the sheet metal covering of the cartridge which is apt to become burnt up in the presence of this air and thus to expose the wall of the can to excessive heat.

The present invention provides an improved type of can with self-contained heating means, and has for its object to obviate the above-mentioned drawbacks, and to provide heating means which will function safely and reliably under all conditions, and which will retain and continue to impart heat to the contents of the can for a considerable length of time after the actual process of combustion has ceased.

A further object of the invention is to provide simple and efficient means for igniting the charge of glowing combustion composition, and reliable means for preventing unintentional ignition thereof through inadvertence or any other cause.

A further object of the invention is to provide heating means in which the igniting device is in the form of a unit capable of being detached from the glowing charge container or cartridge and fitted to a refill to form an independent heating unit for insertion into a can having a suitably recessed end.

With these and other objects in view, the invention consists in inserting into a hollow cup-shaped recess in one end of the can, a closely fitting thick-walled pot made of refractory material and containing a charge of a glowing combustion composition. Adjoining the open end of this pot there is a perforated cylindrical member enclosing the igniting device, and enclosing this latter and the cylindrical member there is preferably provided an outer sheathing which may conveniently serve to assemble the parts of the complete heating device, and which may also be extended to cover the entire pot. The fact that

the thick-walled pot is directly inserted with a close fit into a recess in one end of the can provides very favorable conditions of heat transmission with practically no loss of heat, while at the same time the use of refractory material for the wall of the pot precludes any risk of excessive heat or damage to the wall of the can, ensures steady heat transmission to the contents of the can, and conserves heat which is gradually imparted to the can during a considerable length of time after the actual process of combustion has ceased. The cylindrical member adjoining the open end of the pot serves to insulate the latter more particularly from the portion of the end of the can between the re-entrant portion forming the recess and the outside edge, so that it is unnecessary to stand the can on a fire-proof base during the operation of the heating means. The igniting means consist essentially of a striking pin provided with a match head gripped between suitable friction surfaces, so that when the pin is thrust forward the match head passing between the friction surfaces is caused to ignite. A suitable rapid igniting composition can be provided on or embedded in the glowing combustion charge opposite the match head, to ensure reliable and rapid ignition of the latter by the burning match head. The essential parts of the igniting device are mounted in a closure element associated with the above-mentioned cylindrical insulating member, and means for operating or releasing this device can be provided in conjunction with hood-shaped portion of the sheathing covering the rear end of the complete heating unit.

In accordance with the invention, the heating unit is so constructed that it can be stored and shipped independently of the cans, and inserted or replaced as required, in suitably constructed cans. The unit thus provided can be arranged to be held in position in the recess formed by a re-entrant portion of the end wall of the can, by virtue of fitting closely in this recess. The invention also provides, as above mentioned, for the igniting device and the cylindrical insulating member to be so assembled in the hood-shaped portion of the outer sheathing or shell that they constitute an independent unit which is detachably fitted to the pot containing the glowing charge, so that it can be removed after the charge is spent and replaced on a refill pot for insertion in a fresh can.

We have also found that the sheathing of the pot can be dispensed with, more particularly when the igniting device is arranged to be de-

tachable and capable of being used repeatedly in connection with refill pots, in which case the igniting unit can be provided with a protecting hood, and arranged to fit tightly on the end of the pot, to form a cartridge-like unit for insertion in the cup-shaped recess provided in one end or the other of the can.

Forms of construction embodying the invention are shown, by way of example, in the accompanying drawing, in which:

Fig. 1 shows, in longitudinal section, one form of the invention.

Fig. 2 shows a modified form, likewise in longitudinal section.

Fig. 3 is a detail view of the form of construction shown in Fig. 2, on a reduced scale, showing the igniting device in the released position.

Fig. 4 shows a further modification, in longitudinal section.

Fig. 5 is an enlarged cross sectional view taken on line 5-5 of Fig. 4

Referring to Fig. 1, 1 denotes the can one end wall 2 of which is provided with a re-entrant portion forming a cup-shaped recess 3 for the accommodation of the heating cartridge. This latter consists essentially of a sheet metal shell 4, a lining 5 of refractory material (magnesite, soapstone, or the like), and a charge 6 of glowing combustion composition. The outer shell is completed by the hood-shaped portion 8 provided with apertures 7. Inside this hood-shaped portion 8 of the shell, and pressed by it against the end of the refractory lining or pot 5 there is provided a cylindrical member 9 (likewise of magnesite, soapstone, or the like) having a flange portion adjacent the pot with interruptions or apertures 10 which are covered over on the inside by a network, gauze, or the like 11. This cylindrical member 9 has a central hole lined by a bushing 12 in which the striking pin 13 is guided. The match head on this pin is situated between the two interiorly roughened spring tongues 12^a pertaining to the bushing 12. When the striking pin is thrust forward the match head rubs against the roughened tongues and ignites, and then strikes in the burning state against the igniting composition 14 embedded in the top of the charge of glowing combustion 6, with the result that the latter becomes ignited. The gases generated by combustion can escape through the apertures 10 and 7.

In order to protect the contents of the heating cartridge from the effects of the atmosphere during storage, the apertures 7 and the opening 15 in the hood giving access to the end of the striking pin can be sealed with strips of paper or the like.

As shown in Fig. 2, the heating cartridge according to the present invention can also be used with ordinary cans when these latter are provided with a screwed on lid. In this case it is merely necessary to use a special lid 2^a having a suitable recess 3 for the accommodation of the heating cartridge, and to substitute this lid for the ordinary lid on the can, after which the heating device can be used in the same way as with a specially constructed can already equipped with the heating device.

The heating cartridge shown in Fig. 2 is substantially the same as that shown in Fig. 1, the only difference being that the cylindrical member is in the form of a sheet metal stamping 9^a, and the striking pin provided with spring operation and hand operated releasing means.

For this purpose there is provided within the

hood-shaped portion of the shell a disc 20 stressed by a spring 21 and provided with an aperture through which a retaining and releasing member 23, supported against the hood, is adapted to pass. This member 23 is in the form of a pin having a head seated in a depression in the hood and a cross piece on its outer end and adapted to pass through a slot aperture in the disc 20, and when turned after being passed through the slot aperture, to retain this disc in the raised position against the action of the spring 21 over the end of the striking pin 13. When the pin 23 is twisted from the position shown in Fig. 2 to that shown in Fig. 3, the cross piece 22 is brought into registration with the slot aperture in the disc 20 and the latter is thereby liberated and actuates the striking pin 13 under the action of the spring 21. The retaining and releasing means employed could be of any other suitable construction, provided they be operable from the outside to released actuating means for the striking pin. The end of the pin 23 could for instance be screw threaded in the disc 20 so that several turns of the pin would be required to operate the igniting device. In the example shown, the head of the pin 23 is provided with a slot for engagement by a small coin or any other suitable implement.

In the form of construction shown in Fig. 4, one end 31 of the cam 1 is provided with a re-entrant portion 32 which forms a recess which is preferably widened somewhat towards the mouth, as shown at 33. The heating cartridge capable of being inserted into and taken out of this recess consists of the thick-walled refractory pot 34 and of a detachable head portion frictionally fitted to the open end of the pot. This portion comprises a cap 36 having a shouldered and flanged lower edge 36^a with which it is tightly fitted to the top of the pot, as shown. This cap 36 is provided with apertures 37 which are preferably covered over by a network or gauze 38. Riveted or otherwise fastened to the cap 36 there is a second cap 36^b adapted to serve as a protecting hood and as means for grasping and holding the cartridge in the hand. Between the two caps 36 and 36^b there is provided an insulation layer 39, for example of asbestos sheet or the like. To one or both of these caps there is attached a spring 40 of lyre-shaped cross-section, or otherwise suitably shaped, which serves as a guide for the striking pin 41, and which together with this latter constitutes the igniting device for the charge 42 of glowing combustion composition. A match head on the lower end of the pin 41 contacts with the roughened surface on the inside of the spring 40 and rubs against the same, when the pin is thrust forward, thus causing the ignition of the charge 42.

The essential feature of the form of construction last described is the fact that the pot is readily detachable from the head portion comprising the igniting device, so that these parts can be repeatedly re-used. Further, the thick-walled pot has no sheathing or shell made of sheet metal, and is adapted to be directly inserted into the cup-shaped recess in the end wall of the can.

The heating device provided by the invention can be used in conjunction with any type of can or the like container, and also for example with provender- or mess-tins, provided they be suitably shaped. The device is thus particularly convenient for use by hikers, moun-

taineers, and explorers, since it does away with the necessity for carrying cooking equipment.

Mess-tins intended for use with the heating cartridges according to the present invention can be provided with a suitable safety valve, for example of the spring type.

We claim:

1. In a can intended for the reception of foodstuff or the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit closely in the said recess, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the open end of the said pot, and means housed within the said member for igniting the said charge.

2. In a can or receptacle for the reception of foodstuff or the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit closely in the said recess, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the open end of the said pot towards the outside of the receptacle, a holder attached to the said member, friction surfaces associated with the said holder, a striking pin slidable in the said holder, and a match head adapted to engage between and to be ignited by the said friction surfaces.

3. In a can intended for the reception of foodstuff or the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material fitted closely in the said recess, a charge of glowing combustion material in the said pot, a perforated cylindrical member adjoining the open end of the said pot towards the outside of the can, a covering of network material over the inside of the said member against the perforations therein, and means housed within the said member for igniting the said charge.

4. In a can or receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material closely fitted in the said recess, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the open end of the said pot towards the outside, a perforated hood attached to the said pot and adapted to enclose the said member and to press the same against the end of the pot, and means housed within the said hood for igniting the said charge.

5. In a receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material closely fitted in the said recess, a charge of glowing combustion composition in the said pot, a supply of rapidly igniting composition on the outer end of the said charge, a perforated cylindrical member adjoining the outer end of the said pot, and means associated with the said member for igniting the said charge.

6. In a receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit into the said recess, a metal shell encasing the said pot, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the outer end of the said pot, a perforated hood attached to the said shell and

adapted to enclose the said member and to press the same against the outer end of the said pot, and means housed within the said hood and associated with the said member, for igniting the said charge.

7. In a receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit into the said recess, a metal shell encasing the said pot, a charge of glowing combustion composition in the said pot, a cylindrical member of refractory material having a centrally pierced solid outer portion and a perforated flange portion adjoining the outer end of the said pot, a covering of network material on the inside of the said flange portion against the said apertures therein, a perforated hood attached to the said shell and adapted to enclose the said member and to press the same against the outer end of the said pot, a lining in the central hole in the said solid portion, interiorly roughened spring tongues on the said lining, a striking pin slidable in the said lining and having its outer end normally projecting through a countersunk opening in the said hood, and a match head on the other end of the said pin normally situated immediately above the said tongues.

8. In a receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit into the said recess, a metal shell encasing the said pot, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the outer end of the said pot, a perforated hood attached to the said shell and adapted to enclose the said member and to press the same against the outer end of the said pot, self-acting means housed in the said hood for igniting the said charge, and means operable by hand from the outside for initiating the functioning of the said self-acting igniting means.

9. In a receptacle for foodstuff and the like, an end wall having a re-entrant portion forming a cup-shaped recess, a relatively thick-walled pot of refractory material adapted to fit into the said recess, a metal shell encasing the said pot, a charge of glowing combustion composition in the said pot, a perforated cylindrical member adjoining the outer end of the said pot, a concave head on the said cylindrical member, a perforated hood attached to the said shell and adapted to enclose the said member and to press the same against the outer end of the said pot, a holder sleeve attached to the said head, interiorly roughened spring tongues on the end of the said sleeve nearest the said charge, a striking pin slidable in the said sleeve, a match head on the end of the said pin normally situated immediately above the said tongues, a disc above the other end of the said pin, an expanding spring tensioned between the said disc and the said hood, and means operable from the outside for retaining the said disc raised against the action of the said spring and for releasing the same to strike against the said pin under the action of the said spring.

10. In a receptacle for foodstuff and the like, a heating device as claimed in claim 9 in which the said retaining and releasing means comprise a pin detachably connected to the said disc and supported by the said hood.

11. In a receptacle for foodstuff and the like, a heating device as claimed in claim 9 in which

the said retaining and releasing means comprise a slotted aperture in the said disc, a pin having a slotted head countersunk in a depression in the said hood and at the other end a cross piece adapted to register with and to pass through the said slotted aperture, and on being turned out of registration with the said aperture after having been passed therethrough, to retain the said disc in the raised position against the action of the said spring.

12. A heating unit for insertion in a recess in an end wall of a receptacle for foodstuff and the like, comprising a relatively thick-walled pot of refractory material, a charge of a glowing combustion composition in the said pot, a perforated, cylindrical, cap-shaped member frictionally fitted to the outer open end of the said pot, network material on the inside of the said member against the apertures therein, and means within the said member for igniting the said charge.

13. A heating unit for insertion in a recess in an end wall of a receptacle for foodstuff and the like, comprising a relatively thick-walled pot of refractory material, a charge of a glowing combustion composition in the said pot, a perforated, cylindrical, cap-shaped member frictionally fitted to the open end of the said pot, network material on the inside of the said member against the perforations therein, an outer protecting cap at-

tached to the head of the said member, a layer of insulating material between the head of the said member and the head of the said protecting cap, and means within the said member for igniting the said charge.

14. A heating unit for insertion in a recess in an end wall of a receptacle for foodstuff and the like, comprising a relatively thick-walled pot of refractory material, a charge of a glowing combustion composition in the said pot, a perforated, cylindrical cap-shaped member frictionally fitted to the open end of the said pot, network material on the inside of the said member against the perforations therein, an outer protecting cap attached to the head of the said member, a layer of insulating material between the head of the said member and the head of the said protecting cap, a spring of lyre-shaped cross section attached to and dependent from the head of the said member, at least one roughened surface on the inside of the said spring, an ignition pin held in and guided by the said spring and having its outer end projecting through an aperture in the said heads, and a match head on the other end of the said pin adapted when the said pin is thrust forward to rub against the said surface and thereby to ignite.

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