

Dec. 20, 1938

P. J. CLIFFORD

2,140,952

INHALER

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2 Sheets-Sheet 1

Fig. 1

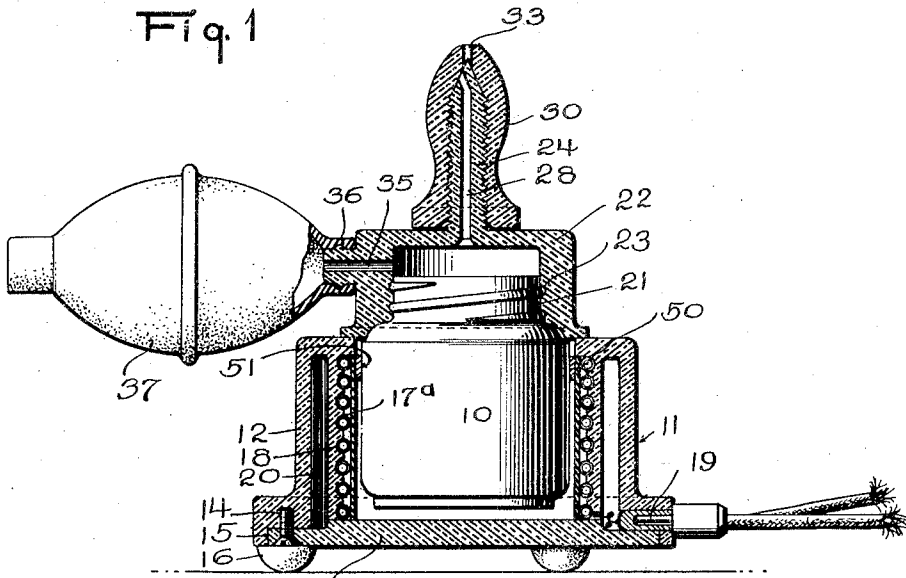


Fig. 2

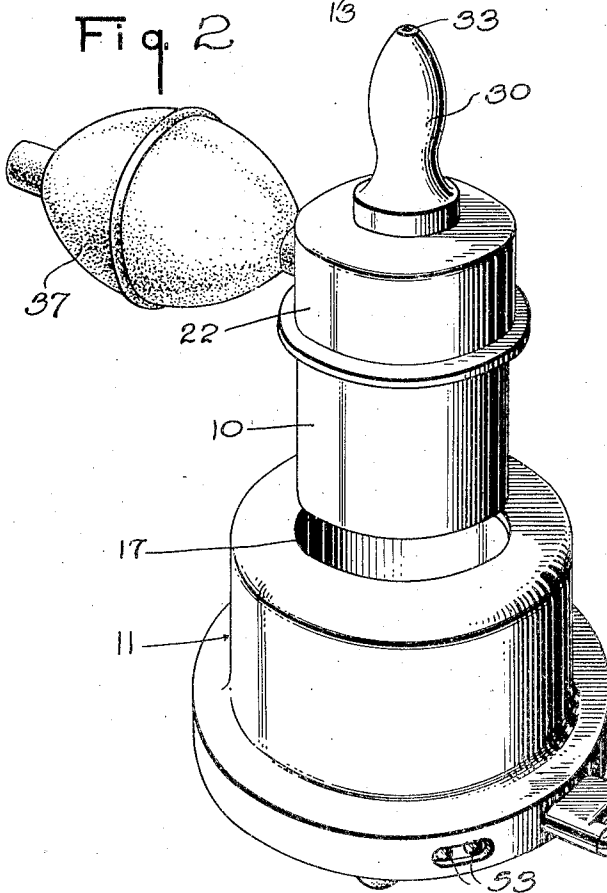
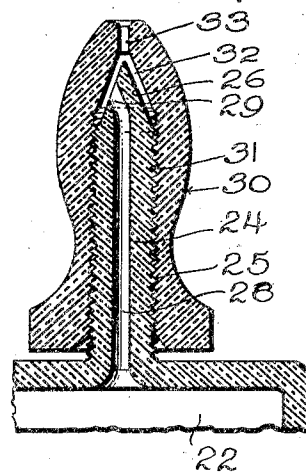


Fig. 3



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Fig. 4

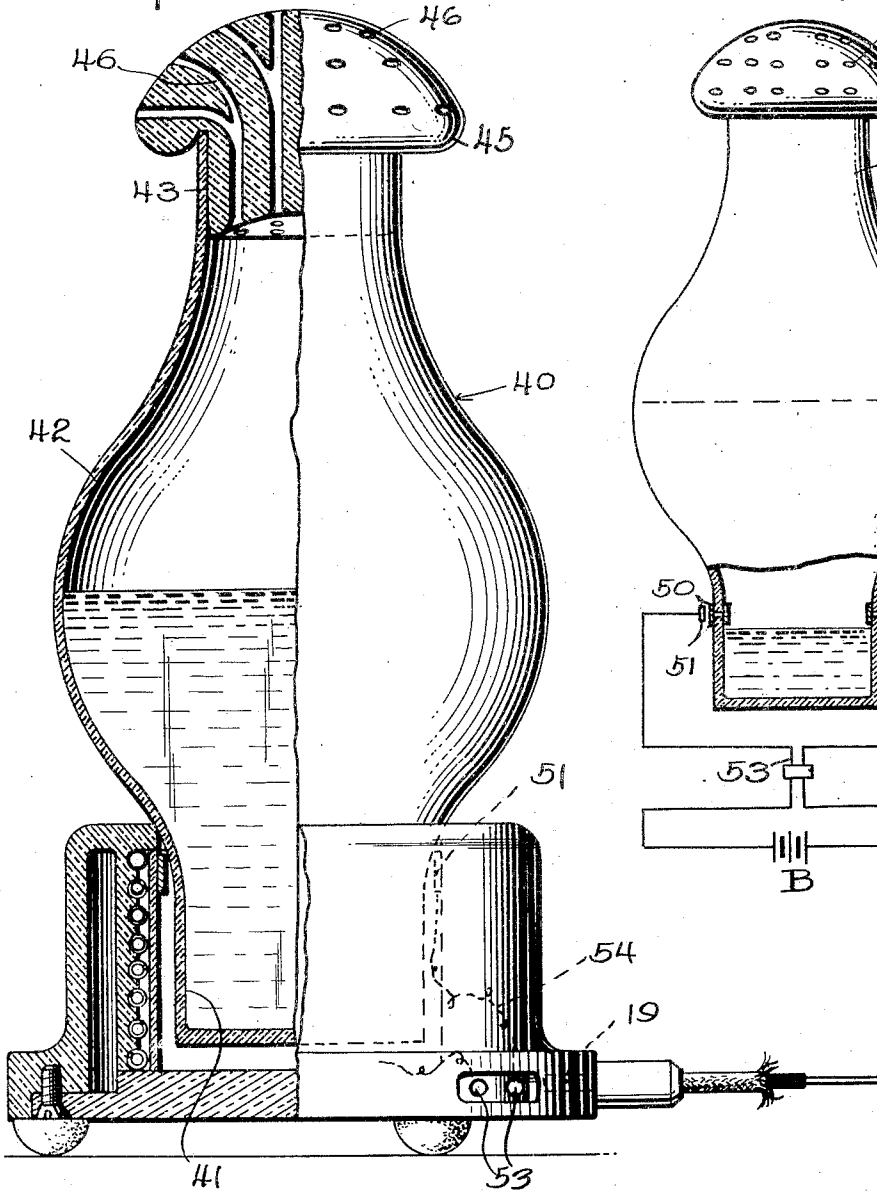
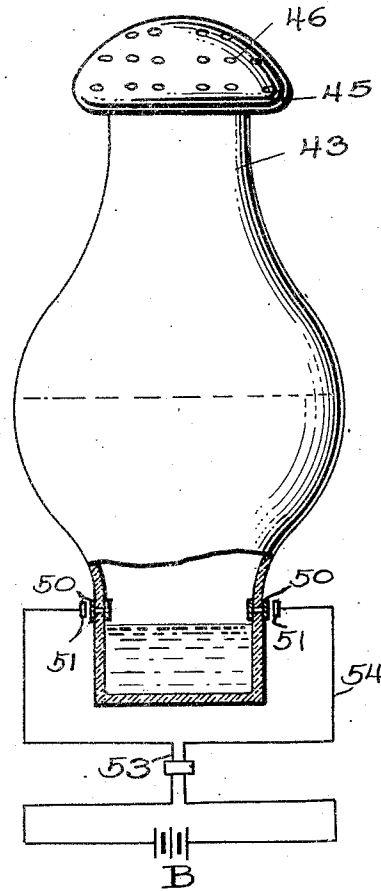


Fig. 5



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10 Claims. (Cl. 128—192)

This invention relates to inhalers and more particularly to appliances for vaporizing certain vaporizable media such as liquids, powder, oil, ointment, and the like, with or without the addition of water, and for rendering the so vaporized products available for application as by inhalation, under forced pressure, or by dissemination into the atmosphere.

Among the objects of the present invention may be noted the provision of improved apparatus for applying heat to vaporizable material in such manner that the vaporized products may be readily applied in the treatment of head colds and the like; the provision of apparatus particularly designed for the vaporization of vaporizable media such as liquids, oils, ointment and the like, in their original containers; the provision of a vaporizing appliance in which the heated container may be readily removed from the heating means, thus to aid in application of the vaporized products as desired; the provision of a vaporizing appliance of the above character which is simple and inexpensive in construction, durable in use, and which requires no special skill in its use and operation; the provision of a vaporizing appliance for heating water and a contained medicant whereby to generate a medicated vapor product which is high in moisture content and which is readily disseminated into the surrounding atmosphere; the provision of an improved form of steaming device by which certain materials may be vaporized in the presence of water; and the provision of a vaporizing device of the last above-named character, which is inexpensive in manufacture, durable in use, and simple in operation.

Other objects will be in part obvious and in part hereinafter pointed out in connection with the following analysis of this invention, wherein is illustrated several of the various possible embodiments of the present invention, together with certain modifications in detail.

In the drawings—

Fig. 1 is a vertical section through one form of vaporizer in accordance with the present invention;

Fig. 2 is a separated view of the medicant container with its associated head and the heating base, as illustrated in Fig. 1;

Fig. 3 is a detail view of certain parts illustrated in Figs. 1 and 2;

Fig. 4 is an elevation, partly in section, of another embodiment of my invention;

Fig. 5 is a modification of the embodiment illustrated in Fig. 4.

Referring to the drawings, wherein like refer-

ence characters designate like parts throughout the several views, the appliance illustrated in Figs. 1-3 is particularly designed for the vaporization of medicant products such as liquids, oils, ointments, and the like, in their original containers. In the embodiment illustrated the reference character 10 designates a jar of generally cylindrical form, and of the character in which certain well known ointments and the like are sold to the consumer. According to the present invention, I propose to vaporize such products in the commercial jar, as illustrated, by the application of heat to the jar, and to subsequently collect and thereupon deliver the vaporized products through a nasal piece, for example, whereby the products may be inhaled or forcibly applied to the afflicted parts of the respiratory tract.

The jar 10 is adapted to be heated when properly associated with a heating base generally designated at 11, such base comprising preferably a cylindrical shell 12 which is closed at one end by a removable bottom plate 13 secured as by screws 14 to the shell and preferably seating in a recess 15 formed therein. Supporting knobs 16 extend from the base whereby the base may rest on and in spaced relation with respect to a horizontal supporting surface. The shell portion 12 thus forms a chamber or socket 17 which opens upwardly for the reception of the aforesaid jar or equivalent container 10.

The shell portion of the heating base 11 is preferably molded from a plastic composition and its chamber is adapted to be heated by a heating coil generally designated 18, which is adapted to be connected by terminals 19 with a source of electrical energy. The heating coil may be suitably protected by a protective wrapping of asbestos or like material, as is well known in the art, the coil being set into a recess 17a opening into the heating chamber 17. Preferably the shell is provided with dead air spaces 20 between the inner and outer walls thereof whereby air in such spaces acts as an insulator and prevents undue dissipation of heat outwardly through the material of the base.

The diameter of the chamber 17 preferably is larger than the diameter of the jar 10, and its depth is also greater than the distance that the jar 10 projects thereinto, as will be hereinafter further discussed.

The jar 10 is usually provided with screw threads along its mouth, on which the conventional jar closure cap is threaded. According to the present invention I propose to provide a vapor

collecting head or cap generally designated at 22, which is screwed on to the threads 21 of the jar 10 upon removal of the conventional closure cap, the head being of general cap formation with a head cavity or chamber of appreciable depth, threaded at 23 whereby the head may be screwed on to said jar to render the head chamber airtight. Projecting upwardly and centrally from the head is a preferably integral stem 24 which is exteriorly threaded as at 25, the stem terminating in a cone tip as at 26. The stem is longitudinally bored as at 28, the bore communicating with the cap or head cavity and terminating at its upper end in a lateral bore 29 which opens through the conical tip of the stem and preferably adjacent the bottom zone thereof.

A nasal piece generally indicated at 30 is adapted to be threadedly associated with said stem, the nasal piece being interiorly threaded at 31 and the upper cavity surface thereof being of cone shape, as at 32, and complementary to the cone surface 26 of the stem. An outlet opening 33 extends through the tip of the nasal piece for the purpose of establishing communication with the bore 28 thru the lateral bore 29 of the stem, under certain conditions.

When the nasal piece 30 is screwed home on the head stem 24, as in Fig. 1, it will be seen that the conical surface of the nasal piece closes communication between bore 28 of the head stem and the nasal piece opening 33, by reason of the fact that the conical surface 32 of the nasal piece covers the lateral opening 29. However, as the nasal piece 30 is unthreaded for a slight distance, the conical surface 32 of the nasal piece moves upwardly from the lateral bore 29 and establishes communication between the interior of the head and the opening 33 of the nasal piece.

The head 22 is provided with an air ingress opening 35 through which air may be drawn or forced into the head. Such opening 35 may extend through a bushing from a vertical wall of the head, as indicated, and provided on its exterior with a shouldered or other surface whereby an air bulb 37 may be secured thereto.

In normal use of the appliance as aforesaid, the commercial cap closure is removed from the jar 10 and the head 22 is substituted therefor. The jar 10 with the attached head is thereupon inserted into the socket or chamber 17 of the heating base 11 and, by reference to Fig. 1, it will be seen that the bottom edge of the head rests on the top horizontal surface of the heating base, with the jar 10 thereupon depending from the head. The arrangement is such that the jar does not extend the full depth of the chamber and, by reason of the fact that its diameter is less than the inner diameter of the socket, a clearance space is provided between the outer jar surface and the inner wall of the socket. Upon suitable connection of the coil to a source of electrical energy as by plugging in the coil, heat is generated, and the contents of the jar are heated sufficiently as to become vaporized, the vaporized products rising within the head cavity and stem bore 28. Upon partial unthreading of the nasal piece, such vaporous products pass through the outlet opening 33 of the nasal piece and may be inhaled by the patient. If it is desired to force the vapor products through the nasal piece so that they reach parts such as the sinus canals and eustachian tubes not treatable by inhalation, the air bulb 37 is coupled on to the stud 36, and by suitable manipulation of the air bulb the vapor is forcibly discharged through the nasal piece into the nose.

As will be evidenced by reference to Fig. 2, the head and jar may be readily lifted from the heating base so that the applying portion of the device, upon suitable heating, is extremely portable, and its use is not complicated by the requirement that the heating base and electrical cords be raised also.

Suitable control of the coil may be provided as, for example, a thermostatic switch which will operate to cut out the heating coil upon a predetermined temperature being reached. However, I propose to so wind the coil that it heats to a certain predetermined temperature, thereby to eliminate the necessity for controls in the nature of cutout switches. Thus, with proper selection of coil, the same may be energized for long periods of time, and the unit will give off vaporization without danger of overheating.

The advantages of the above described arrangement will be readily apparent. Primarily, however, the appliance as aforesaid, which heats the material to be vaporized in the container or jar in which it is sold, does away with the old practice of removing a certain portion of the contents from the jar as for example, in a spoon, and thereupon heating the spoon. All that is required in the present arrangement is the application of the head in substitution for the conventional jar cap and subsequent heating. It will be seen therefore that the use of the present arrangement is accompanied by extreme simplicity in manipulation and does away with unhandy and unsightly practices as heretofore.

While in the foregoing I have illustrated one form of commercial jar 10 of cylindrical shape, it will be understood that jars of other shapes and contours may be used in the manner described without requiring any substantial redesign of the parts.

Considering now the modified form of device illustrated in Figs. 4 and 5, such modified construction is in the nature of a steamer in which the medicant is heated in water, thus to give off a moist vaporization desirable in the treatment of certain ailments such as croup, laryngitis, etc. In such modified form, a heating base similar with the base previously illustrated is used, with which is associated a water container or bottle generally indicated at 40 and preferably comprising a cylindrical bottom portion 41 adapted to extend into the chamber 17 of the heating base, and a substantially enlarged globular upper portion 42 from which extends a neck portion 43 having an open mouth. The cylindrical portion 41 of the water container is analogous to the jar 10 previously described, in that it extends into the heating base and is thus disposed in close proximity to the heating coils therein contained. Preferably the water container is made of transparent material capable of withstanding high heat, such as "Pyrex", whereby the water in the container may be heated to substantially high temperatures without danger of breakage. A stopper 45 is inserted into the mouth of the bottle, such preferably being of mushroom shape, and being provided with a plurality of through passages or channels 46 whereby the vaporized products may pass there-through and be disseminated into the surrounding atmosphere.

In use of the device, as aforesaid, the stopper 45 is removed, a quantity of water is put into the container, in amount approximating 8 ounces,

and a generally lesser quantity, such as a spoonful, of the medicant such as ointment, compound tincture of benzoin, or the like is added to the water and goes into solution therewith. Upon re-insertion of the stopper and connection of the heating coil to a source of electrical energy, the water in the container is brought to a boiling point, causing steam to be given off, and also causing the medicant to give off its own vaporization. The combined vaporized products pass out through the openings 46 of the stopper into the surrounding atmosphere and act to moisten and medicate such atmosphere as is well known.

As with the Figs. 1-3 modification, the portion 41 of the bottle or container of the present embodiment is so dimensioned that a clearance space is provided between the exterior surface thereof and the interior shell of the heating base, whereby no direct contact between the bottle wall and the heating coil can take place. It will be appreciated that the bottle is supported in its upright position in the base and bears against the inner edge corner of the top surface of the base whereby suitable support and balance are obtained.

From the foregoing description it will be obvious that the device is exceedingly simple in operation and in an expeditious manner overcomes the disadvantages of the hitherto used "steaming kettles" which are crude in manufacture and which require excessive manipulation in use. It is also notable that the water container, being of glass, pyrex or like material, is readily washable, and in the event of discoloration may be cleansed upon the application of boiling water thereto without deleterious effects.

In Fig. 5 I have illustrated a further embodiment of the arrangement described in connection with Fig. 4, according to which the bottom cylindrical portion 41 of the container is provided with diametrically opposed contacts 50, such being arranged substantially above the bottom of the portion 41. Such contacts 50 are adapted, when the container is properly related with the heating base, to engage spaced contacts 51 set into the base chamber 17 and connected to a suitable source of energy diagrammatically illustrated as battery B. Upon the medicant being added to the water in the container and going into solution therein, the solution becomes electrolytic, and current flows between the contacts 50 as the water becomes a conductor. Consequently, a heating effect is obtained so long as the water level in the container is above the level at which the contacts 50 are arranged. If, due to excessive evaporation, the water level falls below the level of the said contacts 50, the circuit is broken and the heating effect is automatically interrupted, with the result that the possibility of impairing of bottle by excess heat is positively precluded.

In order that a single heating bore may be used interchangeably for heating jars such as the jar 10 of the Figs. 1-3 embodiment, and containers such as the bottle 40 of the Figs. 4 and 5 modifications, and at the same time obtained heating effects described in relation to Fig. 5, I may equip the base with additional connections independent of the terminals 19 and associated leads connecting with the heating coil 18 such independent connections consisting of the terminals 53 (Figs. 2, 4 and 5) which are connected by leads 54 to the contacts 51 arranged in said chamber 17. The arrangement is such that when a plug is associated with terminals 19, the contacts 51 are not energized, and, conversely, when terminals

53 are plugged in, the heating coil is inoperative. With the heating coil so cut out, liquid in container 40 is quickly heated as a full surge of current is immediately available and is not limited by distribution through the resistance of the coil 18.

It is also possible to connect the bottle in series with the heating coil, so that upon the occurrence of low water level in the bottle, the circuit is automatically interrupted, thus cutting out the heating coil. With such an arrangement, it will be understood that contacts 51 are connected in series with the coil 18, the circuit being completed upon insertion of the bottle portion 41 in the heating chamber.

While in accordance with the statutes I have described certain physical embodiments of my invention, it will be understood that certain changes and additions may be made thereto without departing from the invention, and all such changes and modifications are intended to be embraced within the scope of the following claims.

I claim:

1. In a vaporizing appliance, the combination of a base member having a heating chamber therein, heating means in said base member for heating said chamber, a container for the medium to be vaporized, a vapor collecting cap on said container and having an air inlet and a vapor discharge passage, and the cap removably engaging the base member in such manner that the container extends a substantial distance into said heating chamber, and whereby the cap and container are removable as a unit from the base member.

2. In a vaporizing appliance, the combination of a base member having a heating chamber therein, heating means in said base member for heating said chamber, a container of lesser dimensions than those of said chamber, and a vapor collecting cap secured to the container and having an air inlet and a vapor discharge passage, said cap bearing against a surface of the base member and operative to suspend the container in said heating chamber, said cap being unsecured to said base member whereby the cap and container may be bodily raised from said base member.

3. In a vaporizing appliance, the combination of a base member having a substantially cylindrical and upwardly opening heating chamber, heating means in said base member and disposed generally about said chamber, a substantially cylindrical container for the medium to be vaporized, a vapor collecting cap secured to said container and having a vapor discharge passage, a nasal piece associated with said cap in controlling relation to said passage, the cap having an air ingress opening, and being provided with a lower edge portion cooperating with the top of said base in positioning said container in said chamber.

4. A vaporizing head for a jar containing vaporizable medium comprising a cap portion adapted to be secured to the jar upon removal of and in substitution for the conventional closure cap, and providing a chamber for the collection of vapor given off by said medium, the lower edge of the cap being of appreciably greater diameter than that of the jar to provide a rim adapted to support the cap and jar as a unit on a base member, a bored stem extending from said cap portion with its bore communicating with said chamber, and a nasal piece associated with said stem and having an opening therethrough

adapted to communicate with the bore of the stem, said cap portion having an air ingress opening.

5. A vaporizing head for a jar containing vaporizable medium comprising a cap portion adapted to be secured to the jar upon removal of and in substitution for the conventional closure cap, and providing a chamber for the collection of vapor given off by said medium, the lower edge of the cap being of appreciably greater diameter than that of the jar to provide a rim adapted to support the cap and jar as a unit on a base member, a bored stem extending from said cap portion with its bore communicating with said chamber, a nasal piece rotatably mounted on said stem and having a discharge opening, said nasal piece being operative upon rotation to control communication between the bore of the stem and said discharge opening, said cap portion having at least one air ingress opening.

6. A vaporizing head for a jar containing vaporizable medium comprising a cap portion adapted to be secured to the jar upon removal of and in substitution for the conventional closure cap, and providing a chamber for the collection of vapor given off by said medium, the lower edge of the cap being of appreciably greater diameter than that of the jar to provide a rim adapted to support the cap and jar as a unit on a base member, a bored stem extending from said cap portion with its bore communicating with said chamber, a nasal piece associated with said stem and having an opening therethrough adapted to communicate with the bore of the stem, said cap portion having an air ingress opening, and an air bulb carried by said cap portion and operative to direct air under pressure to said chamber through said opening.

7. In a vaporizing appliance, the combination of a base member having a substantially cylindrical and upwardly opening heating chamber, heating means in said base member and disposed generally about said chamber, a substantially cylindrical container for the medium to be vaporized for arrangement in said chamber, a vapor collecting cap secured to the neck of the container, the lower portion of the cap being of greater exterior diameter than the diameter of the heating chamber whereby the cap engages against the

top of said base member, thus to position the container in the chamber, the cap having an air inlet and a vapor discharge passage.

8. In a vaporizing appliance, the combination of a base member having a substantially cylindrical and upwardly opening heating chamber, heating means in said base member and disposed generally about said chamber, a substantially cylindrical container for the medium to be vaporized for arrangement in said chamber, a vapor collecting cap secured to the neck of the container, the lower portion of the cap being of greater exterior diameter than the diameter of the heating chamber whereby the cap engages against the top of said base member, thus to position the container in the chamber, a stem extending from the cap and provided with a bore constituting a vapor discharge passage, a nasal piece on said stem for controlling discharge of the vapor product from the cap through said bore, and the cap having an air inlet opening, and an air bulb associated therewith.

9. In a vaporizing appliance, the combination of a base member including a substantially cylindrical shell portion defining a heating chamber, heating means operatively related to said shell portion for heating said chamber, and a vapor collecting head of cap formation adapted to be secured to a commercial jar of vaporizable medium in substitution for the conventional closure cap thereof, the head having a vapor discharge opening, the parts being so constructed and arranged that the lower edge of the head removably seats on the top portion of the shell with the container extending into the heating chamber.

10. In an appliance for heating a vaporizable material in the jar in which it is sold to the consumer, the combination of a base member having a chamber therein adapted to receive the jar, heating means in said base for heating said chamber, and a vapor collecting head of cap formation adapted to be secured to the jar in substitution for the closure cap thereof, the head having a vapor discharge aperture and being provided with a lower edge adapted to seat on the top surface of the base portion, with the jar extending into the heating chamber.

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