May 4, 1937. H. H. MAAS 2,079,126

ART OF UTENSIL MANUFACTURE

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Fig. 1.

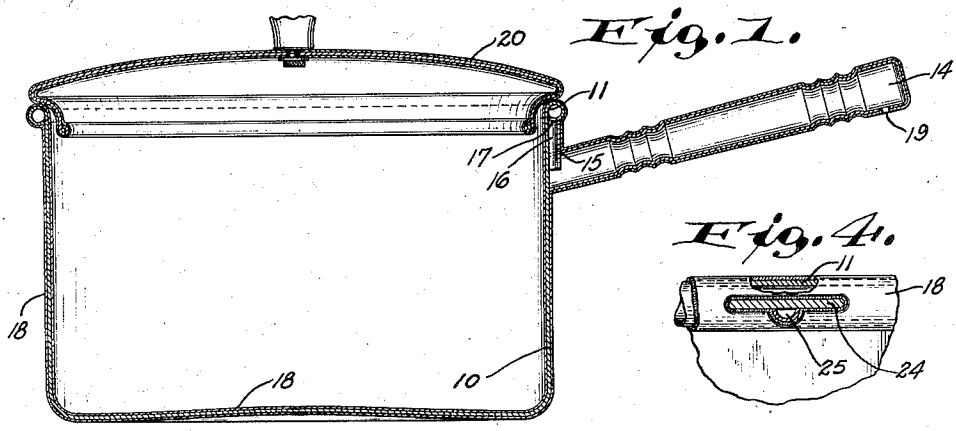


Fig. 4.

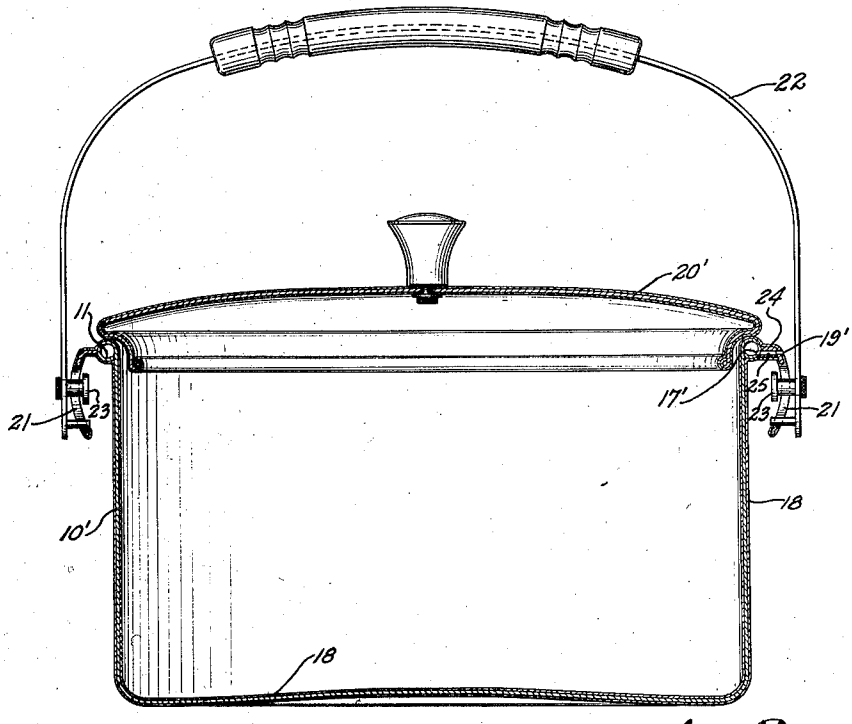


Fig. 2.

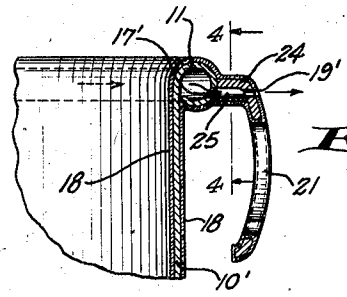


Fig. 3.

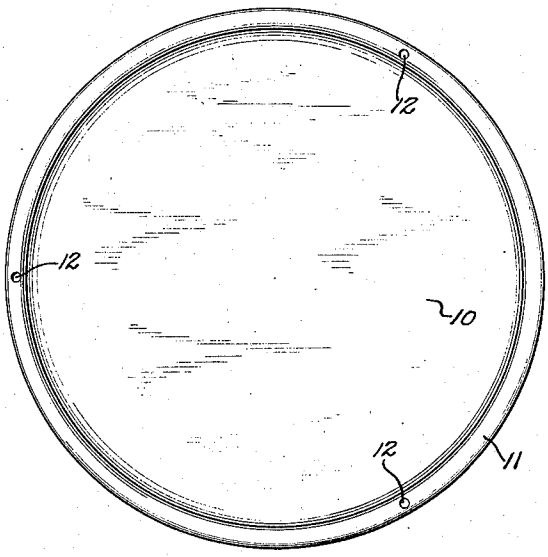
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Fig. 6.



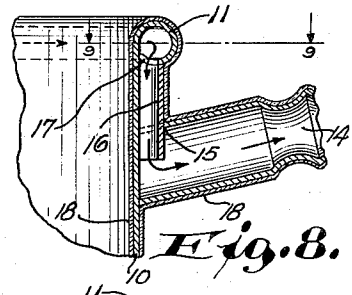


Fig. 8.

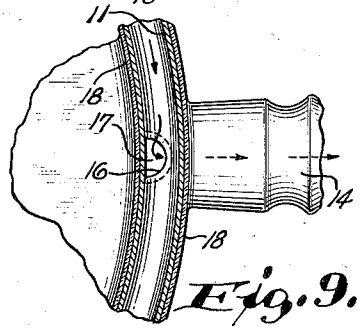


Fig. 9.

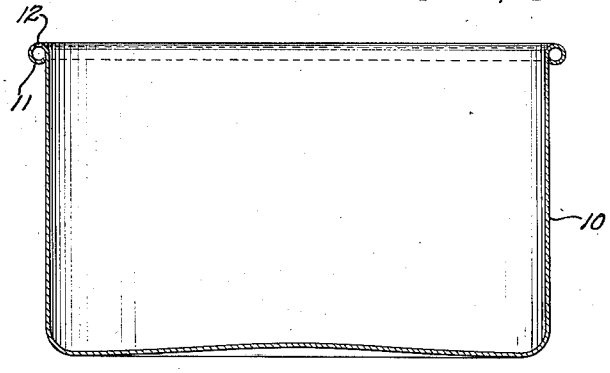


Fig. 5.

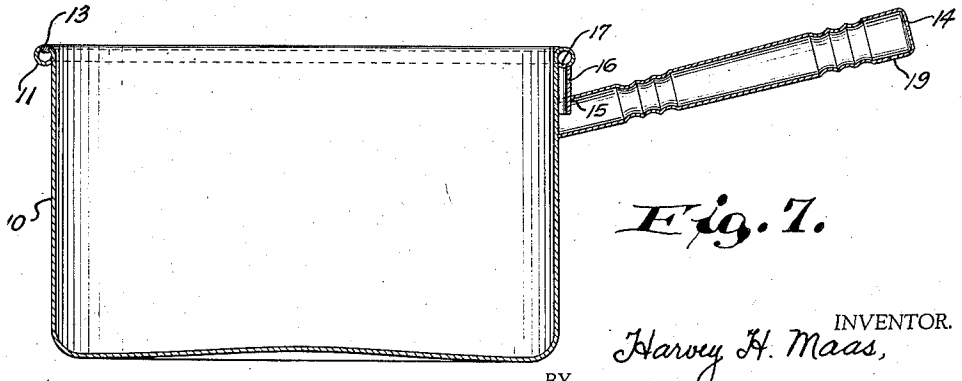


Fig. 7.

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ART OF UTENSIL MANUFACTURE

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Application March 9, 1936, Serial No. 67,846

12 Claims. (Cl. 29—148.2)

The present invention relates in general to improvements in the art of utensil manufacture, and relates more specifically to an improved enameled utensil with a closed bead and to an improved method for the manufacture of the same.

Generally stated, an object of the invention is to provide an enamel coated metallic vessel formed at its open end with an annular closed bead providing a highly attractive and sanitary vessel, and an improved method whereby enameled vessels with closed beads may be expeditiously and inexpensively manufactured on a commercial scale.

Heretofore, enameled vessels and utensils have had their upper peripheral portions bent or rolled inwardly to form beads but in all instances the beads have been open and the same are objectionable from the standpoint of cleanliness and sanitation. It has been recognized that it would be very desirable to form such vessels with closed beads which had no exposed edges nor accessible pockets or cavities for the accumulation of germs, dirt and corrosion and which could be entirely and smoothly enameled, but prior attempts in this direction have been failures. The reason for the prior failures is attributed to the fact that the beads are hollow and when entirely closed and sealed, gases form and expand therein during the enamel firing, and this action causes the applied enamel to blister, chip off and scale in the region of a bead, rendering the completed vessel defective, unsightly and unsalable.

In the present invention it is proposed to provide a vessel with a closed bead but arranged with gas discharge ducts and orifices extending from the bead to a position remote therefrom, which ducts and orifices serve to carry off and discharge gases formed in the bead during the firing of the enamel, eliminating the blistering difficulty and permitting the attainment of a superior form of vessel having a smooth, rounded bead which is easy to keep clean and sanitary, which can not collect foreign matter therein or there-adjacent, and which presents a very neat and attractive appearance.

A more specific object of the invention is to provide an enameled, metallic utensil which has a well defined, rounded bead similar in appearance to that formed on crocks and earthenware products.

Still another specific object of the invention is to provide a utensil of the character described wherein a hollow handle, knob or protuberance is connected with the interior of the bead and serves as a reservoir for collecting gases generated in the bead for ultimate discharge therefrom to the atmosphere.

Another object of the invention is to provide an improved method of forming utensils of the character described which can be carried out economically with a minimum of manufacturing operations.

These and other objects and advantages will be apparent from the following detailed description.

A clear conception of embodiments of the several features comprising the present invention, and of the mode of constructing the improved utensils, may be had by referring to the drawings accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views.

Fig. 1 is a sectional view of one type of completed enameled utensil embodying the invention;

Fig. 2 is a sectional view of another type of utensil constructed according to the present invention;

Fig. 3 is an enlarged, fragmentary, detail sectional view of an upper portion of the vessel of Fig. 2 showing the closed bead and a gas discharge vent through a handle ear;

Fig. 4 is a fragmentary, detail sectional view taken on line 4—4 of Fig. 3;

Fig. 5 is a sectional view showing one step in the formation of the utensil of Fig. 1;

Fig. 6 is a plan view thereof;

Fig. 7 is a sectional view showing additional steps in the formation of said utensil;

Fig. 8 is an enlarged, fragmentary detail sectional view of the upper portion of the vessel of Fig. 1 showing the bead and a vent tube between the bead and the hollow handle; and

Fig. 9 is a fragmentary, detail sectional view taken on line 9—9 of Fig. 8.

In the manufacture of enameled utensils, metal is first shaped into the form of the vessel proper, and the metal adjacent the upper open end thereof is bent or rolled to provide a bead.

With particular reference to the type of utensil shown in Fig. 1, the shaped metallic body is indicated by the numeral 10 and is shown in detail in Figs. 5 and 6. A peripheral bead 11 is formed at the upper end, and this bead is preferably of circular form in cross-section and is entirely closed, so that the interior thereof is hollow.

The body 10 of the utensil is now in condi-

tion to have a handle and a vent tube applied thereto. The type of utensil being described is that of a pot equipped with an elongated rigid handle. It is also customary, for the sake of appearance, to apply the handle to the body **10** somewhat below the bead **11**.

Referring to Figs. 1, 7, 8 and 9, it will be observed that a handle **14** is of circular form in cross section and is hollow. At the inner end of the handle a semi-circular opening **15** is formed in the handle wall and a semi-circular vent tube **16** has an end portion inserted into said opening to extend into and register with the interior of the handle. There is an opening **17** formed in a lower portion of the bead **11** and then the handle and vent tube are applied to the exterior of the body **10** in the manner shown in Figs. 7 and 8 and with the upper end of the vent tube registering with the bead opening **17**. The inner end of the handle is welded to the body **10**, the upper end of the tube **16** is welded to the bead **11**, and the major portion of the tube is welded against the wall of the body **10**.

In the manufacture of enameled ware, prior to applying the enamel coating, it is necessary to clean or "pickle" the metal surfaces, and the cleaning liquid must also be able to enter the hollow bead **11** to clean the inner wall portions and to remove foreign matter from the interior of the bead. Therefore, to permit the entrance and discharge of the pickling liquid relative to the bead, the latter is provided with a plurality of spaced apertures **12**. Then the pickling operation is carried out in the ordinary manner and thereafter liquid which entered the interior of the bead is allowed to drain therefrom through the openings **12**. Subsequently said openings are plugged and sealed as at **13**.

The utensil is now in condition for the enameling operation and a suitable coating of enamel, indicated by the numeral **18**, is applied to the exposed internal and external surfaces of the utensil. After the application of the enamel coating the utensil is placed in an oven at a high temperature to fire the enamel. It is during this operation that gases are generated within the bead **11** and in the form of utensil described, said gases flow through the closed bead **11** to the bead opening **17** and from thence they pass through the vent tube **16** and into the hollow handle **14** where they collect and are slowly discharged to the atmosphere through a small orifice **19** provided in an outer end portion of the handle. By means of this arrangement for conducting and discharging gases during the firing process, all gases are exuded from the interior of the closed head and the same do not attempt to escape through seams and other places, whereby blistering of the enamel is entirely prevented and the completed vessel is unmarred in appearance and has smooth rounded edges all enamel covered, and the bead is completely closed so that foreign matter can not collect therein or thereadjacent. A suitable enameled cover or lid **20** may be provided for the vessel.

Another form of vessel in the nature of a kettle is shown in Figs. 2, 3 and 4 of the drawings, and is indicated by the numeral **10'**. In general, the construction and method of forming this vessel is the same as that described in connection with the utensil of Figs. 1 and 7. However, inasmuch as this vessel does not have a rigid tubular handle, but is equipped with a spanning swing handle, the specific arrangement for venting the closed bead is somewhat different and will be described in detail.

The vessel **10'** is formed with a closed, annular, hollow bead **11** and depending from said bead, at opposite sides, are a pair of ears **21** to which the opposite free ends of a handle **22** are swivelingly attached, as at **23**. One of the ears, where it adjoins the bead, is enlarged (see **24** in Fig. 3) and is provided with an internal duct or chamber **25** opening into the bead **11** through an aperture **17'**. At the outer end of said portion **24** there is a discharge orifice **19'**. This utensil is assembled and enameled and during the firing, the gases travel from the bead **11** through the aperture **17'**, into the chamber **25**, and from thence to the atmosphere by means of the orifice **19'**.

Only several styles of vessels or utensils have been shown and described, but it is obvious that the invention is applicable to various types of enameled vessels, wherein the upper edge is formed with a closed, hollow bead. An essential characteristic of the invention is the provision of a hollow protuberance on the vessel, which serves as a handle, knob, ear or the like, which is exteriorly ported, and which communicates, either directly or indirectly, with the interior of the bead. Thus, the closed bead may be kept intact, but gases flow therefrom for discharge to the atmosphere remote from the bead, and the difficulty of blistering is entirely eliminated.

From the foregoing description it will be apparent that the invention provides an improved method of efficiently and inexpensively producing an enameled vessel with a closed bead. The completed vessel is of attractive and novel appearance, and is particularly sanitary and easy to clean.

It should be understood that it is not desired to limit the invention to the exact steps of the method and to the precise details of construction herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

What is claimed as the invention is:

1. As a new article of manufacture, a metallic vessel having an open end surrounded by an annular hollow closed bead, and a chambered member carried by the vessel and having an orifice and communicating with the interior of the bead.

2. As a new article of manufacture, a metallic vessel provided with a hollow, closed bead, and a hollow protuberance carried by the vessel and communicating with the interior of the bead.

3. As a new article of manufacture, a metallic vessel provided with a hollow, closed bead, and a hollow protuberance carried by the vessel and communicating with the interior of the bead, said protuberance having a discharge orifice therein remote from said bead.

4. A utensil, comprising a metallic container formed with a closed, hollow bead, coating material covering the container and bead, and a hollow protuberance projecting from the container and in communication with the interior of the bead, said protuberance having a discharge orifice therein removed from the bead.

5. A utensil, comprising a metallic container formed with a closed, hollow bead and having a vitreous material applied to its surface portions, and a hollow protuberance projecting from the container and in communication with the interior of the bead and forming the only outlet therefrom, said protuberance being ported remote from the bead.

6. A utensil, comprising a metallic container formed with a closed, hollow bead and having a vitreous material applied to its surface portions, and a handle element secured to the container, said element having a chamber and external orifice and also being in communication with the interior of said bead.

7. A utensil, comprising a metallic vessel having a closed, sealed hollow bead, and means forming a conduit extending from a normally concealed portion of the bead for conducting gases away from the interior of the bead.

8. A utensil, comprising a metallic container having a closed, hollow bead, a handle element projecting from the container and having a chamber and an external orifice, the chamber being in communication with the interior of the bead, and a layer of vitreous material on the container, bead, and handle element.

9. In the process of forming a coated utensil with a closed bead, the steps of heat treating the coating and simultaneously conducting the gases formed in the bead to a discharge vent on the utensil remote from the bead.

10. In the process of heat treating a coated utensil having a closed bead, the step of providing a gas conduit connected to and extending away from the bead, and discharging gas formed in the bead from a portion of the conduit remote from the bead to prevent escape of the gas through the bead seam and rupturing of the coating.

11. In the art of utensil manufacture, the steps of forming a vessel with a closed, hollow bead, applying a hollow protuberance to the vessel and connecting it with the interior of the bead and forming a discharge orifice in the protuberance remote from the bead, coating the vessel with a vitreous material, subjecting the coated vessel to heat, and discharging gas formed in the bead through the discharge orifice via the hollow protuberance.

12. The method of forming enameled ware, which consists in shaping a metallic vessel with a closed, annular, hollow bead, connecting a hollow, orificed handle element to the vessel and in communication with the interior of the bead, coating the vessel with enamel, firing the enamel and causing gases formed in the bead during the firing step to flow into the handle element for discharge therefrom remote from the bead.

HARVEY H. MAAS.