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A. C. SPAHN

2,085,337

CAP AND METHOD OF MAKING SAME

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*Fig. 1*

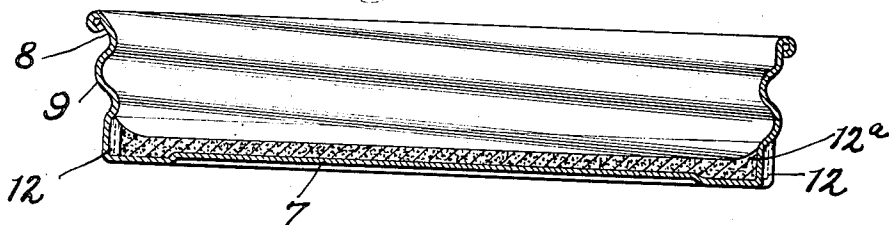


*Fig. 2*

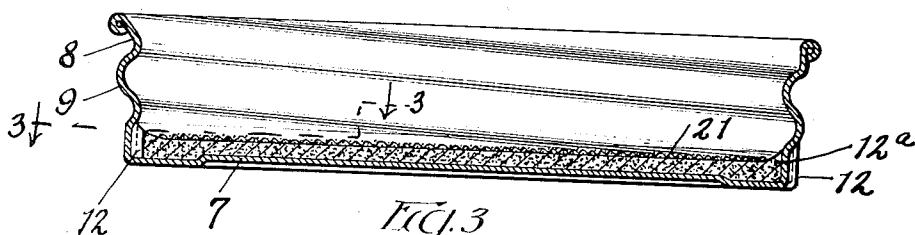


*Fig. 3*

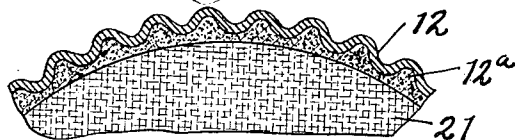


*Fig. 4*

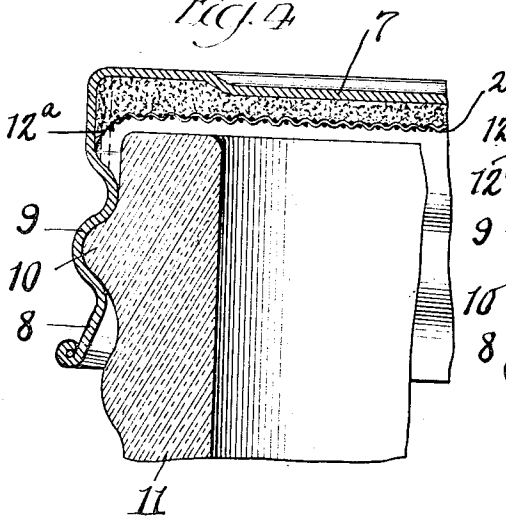
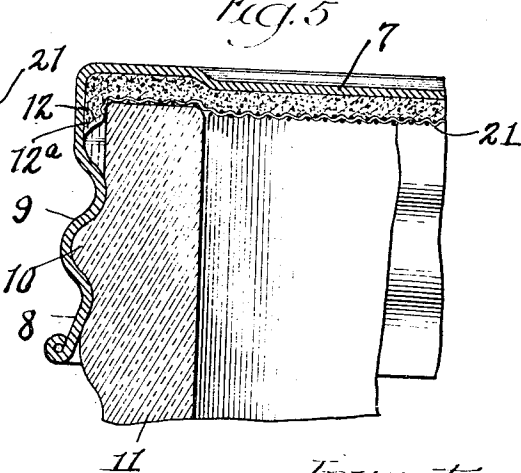


*Fig. 5*



*Inventor:*  
*August C. Spahn*  
*By Fred Gerlach* *Atty.*  
*in*

## UNITED STATES PATENT OFFICE

2,085,337

## CAP AND METHOD OF MAKING SAME

August C. Spahn, Evansville, Ind., assignor to  
Bernardin Bottle Cap Company, Evansville,  
Ind., a corporation of Indiana

Application May 31, 1932, Serial No. 614,388

3 Claims. (Cl. 113—80)

The present invention has reference to metal caps for closing jars and like containers.

One object of the invention is to provide an improved cap which has cast therein a mass or lining of plastic sealing material, such as wax, having a sufficiently high melting point to adapt the cap for sealing a container with hot products therein.

Another object of the invention is to provide a cap of this character which has cast therein a quantity of plastic wax over the inside of the top of the cap with a retaining sheet cast in the wax to prevent it from dropping into the container under high temperatures.

A further object of the invention is to provide a jar or container cap which is generally of new and improved construction and may be manufactured at a low and reasonable cost.

A still further object of the invention is to provide a simple and novel method of making a cap of the aforementioned character.

Other objects of the invention and the various advantages and characteristics of the present cap construction will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views: Fig. 1 is a section of an inverted cap illustrating the manner of casting the wax in the cap. Fig. 2 is a section illustrating the cap while the retaining sheet is being applied to the wax. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a section showing the cap while being applied to the container. Fig. 5 is a section showing the cap sealed on the container.

The invention contemplates casting a mass of plastic wax in a metal cap which is adapted for sealing hot packs in jars or containers. The wax is produced from crude or other suitable oil and has a melting point of approximately 165 to 170° Fahr. A suitable wax, produced from crude oil, is subjected to a sweating process during which it is stored in oven-like containers with a temperature held at a relatively high point to cause the lower melting point fractions to sweat or exude from the wax and leave only the higher melting point fractions.

The wax is of such a character when it has set that it will possess sufficient plasticity to per-

mit the mouth of the container to be embedded therein when the cap is applied to the container to form an efficient or hermetic seal while possessing sufficient stability to form the seal.

The invention is exemplified as applied to a metal screw cap comprising a top wall 7 and an integral skirt or depending flange 8. The latter is grooved to form a screw-thread 9 to interlock with a thread or rib 10 on a container 11. Between the screw-thread 9 and the top 7, the skirt is vertically corrugated or knurled, as at 12, to form a gripping surface whereby the cap will be turned onto and off the container and also to provide marginal pockets into which the wax will flow to aid in uniting it to the cap. The cap is interiorly lacquered before the sealing material is applied.

The wax is first melted so it will flow freely, and brought to a temperature ranging from 300 to 380° Fahr., and the cap is heated approximately to the same temperature. While the wax and cap are both hot, a sufficient quantity of the liquid wax is poured into the inverted cap, as shown in Fig. 1, to cover evenly the top wall of the cap and provide a mass of sufficient thickness to permit the mouth of the container to embed itself in the wax. In its heated and liquid state, the wax will flow into the grooves of the vertical corrugations 12. As the wax and cap cool, the wax shrinks and is cast in and united to the cap. During this cooling capillary attraction retains the wax in the grooves of the corrugations to a point somewhat higher than the level of the mass over the top 7 as indicated at 12<sup>a</sup>. The lacquer on the cap also assists, when the wax is cooled, to unite firmly the wax to the inner face of the top and skirt of the cap. As the result of this casting process, the mass of plastic wax will be united to or amalgamated with the cap and form a mass of sufficient quantity to cover the inside of the top wall of the cap and fill the corrugations, and this casting of portions of the wax in these grooves produces an interlock between the cap and the wax whereby the wax and cap will be secured against relative movement. This wax, when it has set, is sufficiently plastic to permit the mouth of the container to embed itself therein as the cap is screwed onto the container. The screwing of the cap on the container causes the wax between the top of the cap and the mouth of the container to be compressed and also spreads some of the wax between the skirt of the cap and the side of the container so as to substantially fill the space between the cor-

rugated portion of the skirt of the cap and the side of the container.

Just before the wax sets, a retaining disk 21 of a suitable material, such as a textile fabric, is dropped onto the body of wax in the cap, so that when the wax has completely set, the fabric will be cast on and united with the underface of the mass of wax. The disk 21 extends outwardly sufficiently to lap the mouth of the container so it will be clamped between the top of the cap and the container. This fabric will prevent the wax, when it is subjected to high temperature in sealing hot packs, from dripping into the container, if the cap happens to be subjected to excessively high temperatures.

The present cap is adapted for sealing under a vacuum produced by the heat of the product in the container, and differs in certain respects from that which forms the subject matter of United States Patent No. 2,021,205, granted to me November 19, 1935. When the cap is screwed down onto the container with a hot pack therein, the mouth of the container will be embedded in the wax in the cap, and the fabric sheet 21 will also be held in the wax by the mouth of the container, so that the wax will, in event of excessive temperature, be retained in the cap by the sheet 21. This provides a hermetic seal for efficiently excluding air from the container. As the cap is screwed onto the container, some of the wax will be pressed so as to fill substantially the space between the corrugated portion of the skirt of the cap and the side of the container. This will prevent corrosion of the cap at this point which sometimes receives spill from the container.

The invention is to be understood as not restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. As a new article of manufacture, a metal cap adapted to form a seal for a container with a hot pack therein and comprising a top and a skirt depending from the margin of the top and pro-

vided with means for holding it on the neck of the container, a mass of plastic wax having a comparatively high melting point, cast around and firmly united to the margin of the inner face of the top of the cap and of sufficient thickness to permit the neck of the container to be embedded therein to form a seal, and a textile fabric retaining sheet embedded in and substantially co-extensive with the under face of the wax and adapted to prevent dripping of the wax in the event that it is subjected to a high temperature during the hot pack sealing of the container.

2. As a new article of manufacture, a metal cap adapted to form a seal for a container with a hot pack therein and comprising a top and a depending skirt provided with a screw-thread for holding it on the neck of the container and corrugations adjacent the top, and a mass of plastic wax with a high melting point cast on and completely covering the inside of the top of the cap and filling the corrugations, and of sufficient thickness to permit the neck of the container to be embedded therein to form a seal, and a disc-like textile fabric retainer sheet embedded in the underface of the wax and adapted to prevent dripping of the wax in the event that it is subjected to a high temperature during the hot pack sealing of the container.

3. That improvement in the cap art which consists in heating to a temperature ranging approximately from 300° to 380° F. an interiorly lacquered sheet metal cap having a top and a continuous skirt with means to hold it on the neck of a container, in order to soften the lacquer, heating plastic wax having a melting point of between 165° to 170° F. to a temperature substantially the same as that of the cap in order to liquefy the wax and then pouring the liquid wax into the cap while the latter is heated and in an inverted position in sufficient amount to form a layer around the inner face of the top of such depth as to permit the container neck to embed itself therein when the cap is applied to the container, and finally before the wax layer sets embedding a textile fabric sheet in the exposed face of the layer.

AUGUST C. SPAHN.