

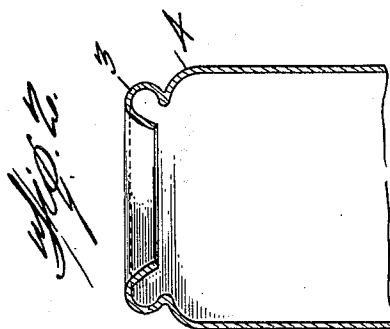
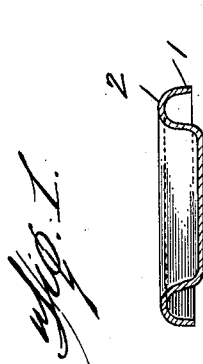
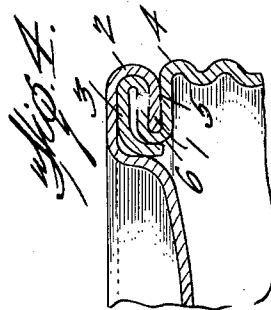
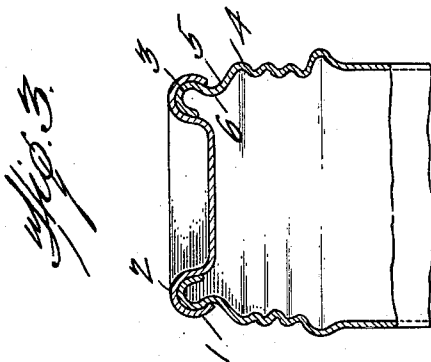
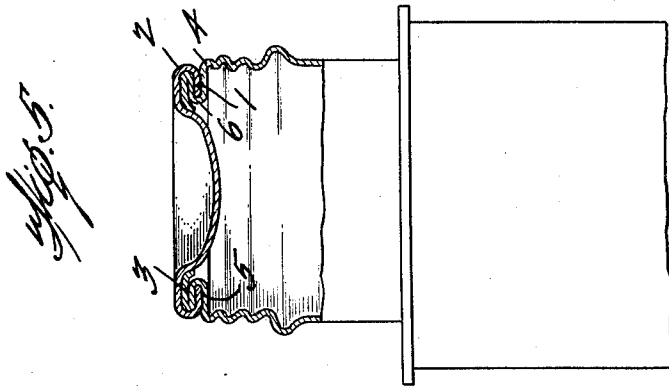
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F. ZAMPARI

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SEALING APPARATUS

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UNITED STATES PATENT OFFICE

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SEALING APPARATUS

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This invention relates to a new means of sealing spouts of tinplate or sheet-metal tins and similar containers for holding liquid products, specially volatile fluids, so as to render the seal impervious to air, gas and liquids. The purpose of the invention is also to supply a seal for the containers of the kind described, which is adapted to the spouts after the containers have been filled with the contents, so that the contents cannot be withdrawn nor can the containers be opened without breaking the seal.

The new means of sealing consists essentially of a dish-shaped seal made of aluminum or other suitable sheet-metal, which is applied to the spout through stamping, both the seal and the spout being so constructed that they will undergo such modifications through contraction and expansion of the rims, when the sealing operation is performed, that their original shape is altered and they constitute a one-piece sealing system, which is the specific object of the present invention.

The utility and practical advantage of this type of sealing over the known processes, consists in supplying an air, gas and water-tight seal for spouts, which prevent leakage of contents and evaporation, and also furnishes an efficient means for the checking of adulteration practices inasmuch as the containers can be opened only by breaking or destroying the seal, and therefore it is not possible to substitute or adulterate the contents without showing that the seal has been tampered with. This means of protection is of remarkable advantage to the manufacturers of liquid products sold in tins, such as food oils, insecticides, lubricating oils and similar products, as it is a protection for the consuming public against falsification and short-contents. Moreover, once the seal has been broken, it is not possible to use the same container over again by replacing the contents; the reuse of the original tins is thus prevented, and further protection provided for the manufacturers and for the public.

The subjoined drawings show the construction of the seal and spout and the different stages of the sealing operation according to

this invention. On the subjoined drawings:

Fig. 1 is a cross-section representing the stamped seal; reference number 1 indicates the rim of the seal, which is a perfectly normal rim and so made that the almost imperceptible roughnesses (which are unavoidable in the stamping operation) remain on the inside, the outside being smooth. Reference number 2 is a round channel.

Fig. 2 is a cross-section showing the construction of the spout; reference number 3 denotes a shoulder on the neck 4 of the spout, which may be plain or screwed or may have any other suitable shape, the shoulder 3 having a slightly smaller diameter than that of the neck 4 and terminating in an inturned rim which is made in an ordinary rolling machine or with a special rolling tool.

Fig. 3 is a cross-section illustrating the mode of adapting the seal on the spout; reference number 5 represents a circular section or surface between the neck and shoulder; reference number 6 is a circular channel or groove at the base of the shoulder.

Once the seal is placed on the shoulder of the spout, as shown on Fig. 3, if compression is circumferentially exerted thereon through vertical and rotational stamping compression, it is evident that the following changes will occur in the structure of the seal and spout: (a) the vertical compression will cause the shoulder 3 to be locked in the channel 2 of the rim of the seal (which is the rough side of the sheet-metal) and it will further cause the circular surface 5 on the top of the neck to give in so that the shoulder 3 will sink and (b) the rim 1 of the seal having been made to adhere through rotational compression to the base of said shoulder, is compressed between said circular surface 5 and the walls of the shoulder, so as to contract itself and enter into the circular channel or groove 6, as shown on Fig. 4.

Fig. 4 is a cross-section illustrating an advanced step of the sealing operation. If the rotational stamping proceeds and further pressure is vertically exerted on the seal, in the position indicated on this figure, as the walls of the neck 4 are stronger and more rigid than those of the shoulder 3, the result

will be that both the rim of the seal and the walls and inturned rim of the shoulder will be crushed against the neck 4, thereby forming a perfectly plane and tight sealing, which is impervious to air, gas and fluids due to the great area of contact between the inter-lapping folds of the crushed system.

Fig. 5 is a cross-section showing a complete sealing made according to the present invention and in the manner herein described:

This is the so-called "plane" or straight type of sealing, as the closure thereby provided presents an even circular surface on the top of the seal. As stated before, the neck of the spout can be screwed or modified so that the sealing system of this invention may be used in connection with any kind of known caps, crown-corks and similar devices, for the further protection of the sealing, if desired. Likewise, this system of sealing can be used in connection with, or without, a sealing compound of any kind, if it is desired to increase its imperviousness to air, gas and fluids of any nature.

I claim:

A sheet metal joint comprising the end of one piece of metal bent upon itself to form a groove and rebent over the first mentioned rebent portion to provide a reinforce, and a second piece of metal having a depressed portion, one wall of which snugly engages the terminal wall of the rebent portion, said second piece of metal beyond the depression extending over and in contact with the second mentioned rebent portion, the terminal of the second mentioned piece of metal engaging in the groove in the first mentioned piece of metal to form a lock and seal.

In testimony whereof I affix my signature.

FRANCO ZAMPARI. [L. s.]