Nov. 19, 1946. H. SINGER 2,411,344

OPENER FOR LIQUID CONTAINERS

Filed Aug. 14, 1944

Fig. 1.

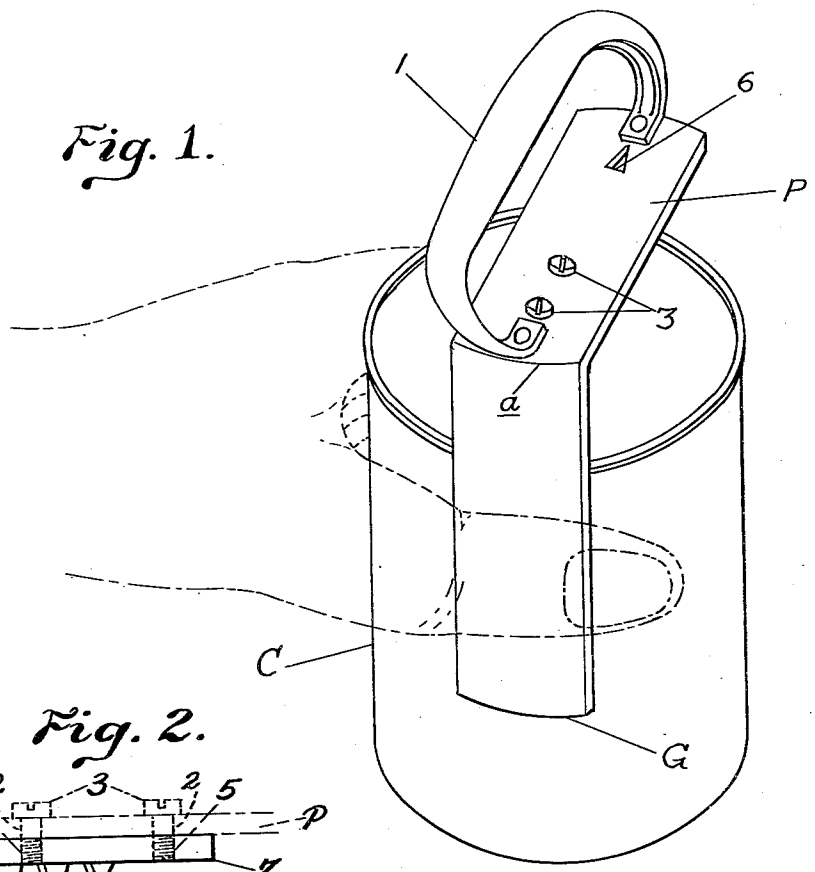


Fig. 2.

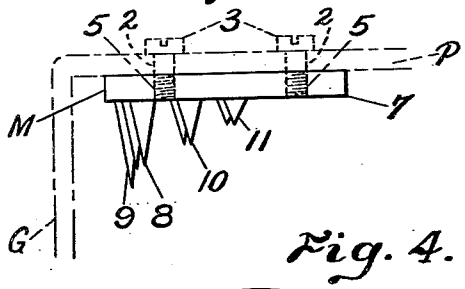
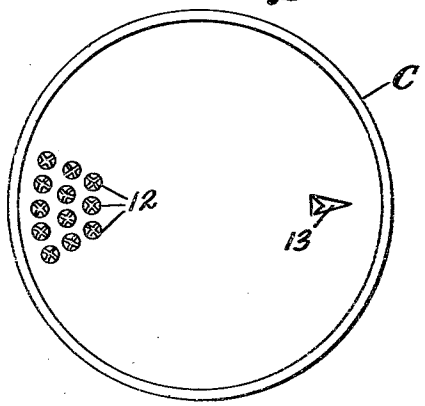


Fig. 4.



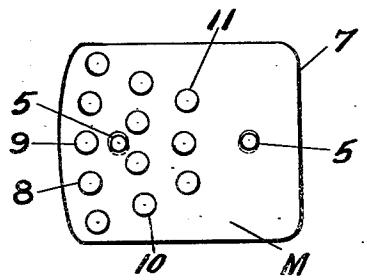


Fig. 3.

Inventor
Henry Singer.

By Wilfred E. Lawson
Attorney

Patented Nov. 19, 1946 2,411,344

UNITED STATES PATENT OFFICE

2,411,344

OPENER FOR LIQUID CONTAINERS

Henry Singer, Honolulu, Territory of Hawaii

Application August 14, 1944, Serial No. 549,400

5 Claims. (Cl. 30—16)

1

This invention relates to an opener for liquid containers, and it is primarily an object of the invention to provide a device of this kind which can be employed with safety and with speed.

It is also an object of the invention to provide a device of this kind which constitutes a single unit and wherein, in its use to a considerable extent, it is under control of the thumb grasping the container with which the device is being used.

Furthermore, the invention has for an object to provide a device of this kind which is entirely free of any projecting parts which, during the use of the device, may inflict injury to the hands of the person and wherein the construction is such as to assure effective protection against any pricks to the person by the penetrating members.

It is a further object of the invention to provide a device of this kind including penetrating members of a character and in such relation one with respect to the other as to permit effective escape of gas from the container and increased inflow of air for greater outflow pressure and which is particularly advantageous for substantially eliminating the liquid within the container foaming over.

A still further object of the invention is to provide a device of this kind which, when used, operates in a manner to substantially prevent ebullition and spilling of the liquid within the container.

A particular object of the invention is to provide a device of this kind which comprises a safety hand guard and which allows for the use of interchangeable puncturing members and wherein the device operates to provide a container with an extremely speedy outlet, together with an air inlet.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved opener for liquid containers whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:

Figure 1 is a view in perspective of an opener for a liquid container constructed in accordance with my invention and in initially applied position with respect to a can;

Figure 2 is a view in elevation of the puncturing member or element which is secured to the plate of the device for use in the manner illustrated in Figure 1, the plate being indicated by broken lines;

Figure 3 is a view in bottom plan of the puncturing member or element as illustrated in Figure 2; and

Figure 4 is a view in top plan of a can showing

2

the perforations made therein by the puncturing member or element.

As disclosed in the accompanying drawing, P denotes an elongated and relatively wide top or surface plate which has its outer edge face *a* slightly curved to closely approach the curvature of the container or can C with which the device is used.

This curved face *a* has extending therefrom an elongated flat guard plate G herein disclosed as of a width equal to the width of the plate P and which, in practice, overlies the side wall of the container or can C when the device is in applied position and to an extent to allow the thumb of the hand, as indicated by broken lines in Figure 1, grasping the container or can to exert requisite pressure on the plate G to effectively hold or clamp the device in working position. This plate G throughout its length is transversely curved to provide an inner substantially convex face in cross section to allow for close contact of the plate G with the side wall of the container or can C.

Rigidly connected to the opposite end portions of the plate P is a handle member 1, herein disclosed as of a loop type. This handle member 1 is positioned at substantially the transverse center of the plate P.

One end portion of the plate P is provided with longitudinally spaced openings 2, Figure 2, through which pass from above the headed members or bolts 3 which thread into the upper portion of the puncturing element or member M. The member M has a top flat face for close contact from below with the plate P and is provided with the properly positioned sockets in its top face into which the members 3 are adapted to thread.

The element or member M comprises a body plate 7 in which the sockets 5, hereinbefore referred to, are produced, and depending from the substantially flat under surface of the body plate 7 and substantially at right angles thereto are the puncturing or penetrating members 8, 9, 10 and 11. These members 8, 9, 10 and 11 are arranged in groups and spaced apart in a direction along the body plate 7 with the member 9 positioned centrally of the members 8 and included in the same group. The groups of members successively decrease in practice with the members of one group staggered with respect to the members of each adjacent group and with the group of the smaller number innermost. All of the members 8, 9, 10 and 11 are tapered and of the same major diameters. However, the members of each group successively decrease in length with members 8 outermost and with the central member 9 in the group with the members 8 of a length materially in excess of the length of the members 8.

By having the members 8, 9, 10 and 11 of varying lengths, a structure is provided wherein the members do not all simultaneously penetrate or puncture and, therefore, require less down pressure at the same instant of operation, thus allowing the element or member M to be employed with ease and facility. The member 9 is provided in order to permit the puncturing of a single hole when desired.

After the puncturing members carried by the plate 7, have penetrated the top of the can to a predetermined extent to form the discharge apertures 12, the top of the can will be punctured at the opposite side from the apertures 12 by the pointed punch 6 which is struck from and depends from the plate P, forming the air vent opening 13 as shown in Figure 4.

In the use of the device, there is very little chance of injury by slippage or sliding due to the firm grip that may be had by the pressure of the thumb on the guard plate G and also on account of the protection afforded by the top or surface plate P. It is to be emphasized that the entire action in the use of the device is accomplished without lessening the thumb pressure on the plate G or shifting around the handle member 1 as only direct downward pressure is required to effect the desired puncturing of the escape opening and the air vent.

In use, it may be advisable to so operate the device as to press the back end of the plate P or that portion carrying the element or member M to first puncture the liquid outlet or escape opening and then manipulate the device to puncture the air vent. While this operation is not essential, it has been found, in practice that by following this procedure, the gas in carbonated containers readily escapes and thereby prevents foaming over.

It is believed to be clearly apparent from the foregoing that the device as herein embodied is one which does not require any projecting rim on the container or can C in order to secure a proper hold as it is only necessary for the user to grasp the handle member 1 and exert the requisite downward pressure and at the same time maintain the device in effective position by pressure of the thumb upon the plate G of the hand of the user grasping the container or can C.

From the foregoing description it is thought to be obvious that an opener for liquid containers constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. A punching device of the class described, comprising a plate to overlie an end of a container, a guard plate extending from the first plate and of a length to overlie the side wall of the container to which the device is to be applied, and puncturing members of different lengths depending from the first plate to punch the end of the container when the first plate is pressed toward the end of the container, said puncturing members being arranged in groups, the members of each group being spaced apart in a direction lengthwise of the first plate and the groups being spaced apart transversely of the first plate, the members of each inner group being of a length less than the length of the members of the outward adjacent group.

2. A punching device of the class described, comprising a plate to overlie an end of a container, a guard plate extending from the first plate and of a length to overlie the side wall of the container to which the device is to be applied, and puncturing members of different lengths depending from the first plate to punch the end of the container when the first plate is pressed toward the end of the container, said puncturing members being arranged in groups, the members of each group being spaced apart in a direction lengthwise of the first plate and the groups being spaced apart transversely of the first plate, the members of each inner group being of a length less than the length of the members of the outward adjacent group, the outermost group including a member of a length materially greater than the length of the members of all of the groups.

3. A punching device of the class described, comprising a plate to overlie the end of a container, a guard plate extending from the first plate and of a length to overlie the side wall of the container to which the device is to be applied, and puncturing members of different lengths depending from the first plate to punch the end of the container when the first plate is pressed toward the end of the container, said puncturing members being arranged in groups, the members of each group being spaced apart in a direction lengthwise of the first plate and the groups being spaced apart transversely of the first plate, the members of each inner group being of a length less than the length of the members of the outward adjacent group, one of the groups including a member of a length greater than the lengths of the members of all of the groups.

4. A punching device of the class described, comprising a plate to overlie the end of a container, a guard plate extending from the first plate and of a length to overlie the side wall of the container to which the device is to be applied, and puncturing members of different lengths depending from the first plate to punch the end of the container when the first plate is pressed toward the end of the container, said puncturing members being arranged in groups, the members of each group being spaced apart in a direction lengthwise of the first plate and the groups being spaced apart transversely of the first plate, the members of each inner group being of a length less than the length of the members of the outward adjacent group, the members in the groups successively decreasing in number with the group of the smallest number being innermost.

5. A punching device of the class described, comprising a plate to overlie the end of a container, a guard plate extending from the first plate and of a length to overlie the side wall of the container to which the device is to be applied, and puncturing members of different lengths depending from the first plate to punch the end of the container when the first plate is pressed toward the end of the container, said puncturing members being arranged in groups, the members of each group being spaced apart in a direction lengthwise of the first plate and the groups being spaced apart transversely of the first plate, the members of each inner group being of a length less than the length of the members of the outward adjacent group, the members in the groups successively decreasing in number with the group of the smallest number being innermost, the members of the groups being in staggered relation.

HENRY SINGER.