

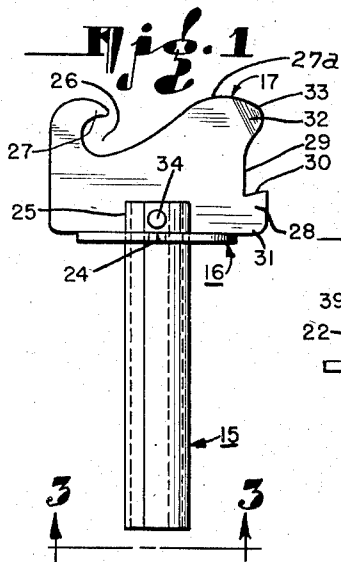
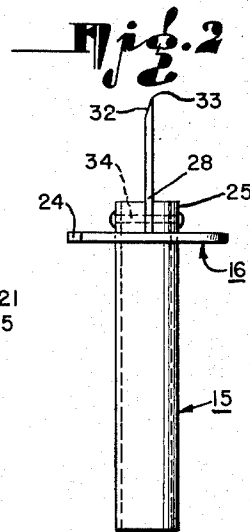
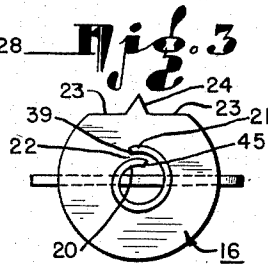
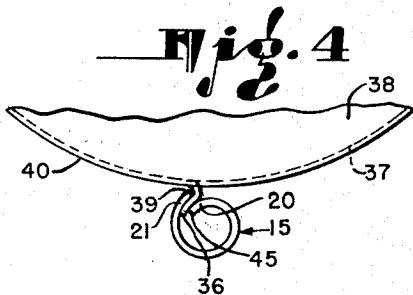
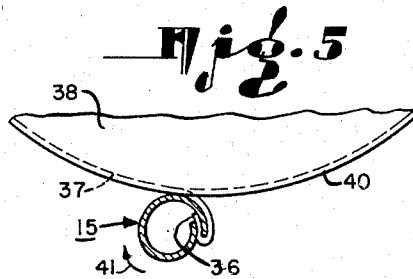
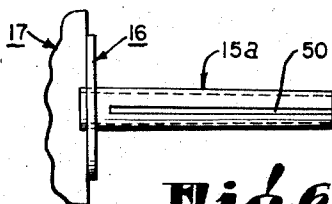
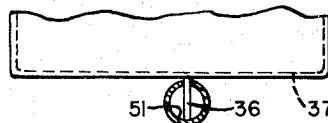
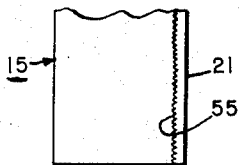
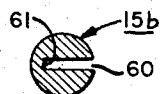
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TUBULAR TEAR STRIP REMOVER WITH OVERLAPPING EDGES

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TUBULAR TEAR STRIP REMOVER WITH
OVERLAPPING EDGES

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This invention relates to container opening devices, and relates more particularly to multiple use openers for opening various types of containers.

It is an object of the invention to provide a device of this character which has means for opening various types of containers, which means are cooperatively and novelly arranged.

Another object of the invention is to provide a device of this character which is adapted to open tearing strip cans, remove bottle caps, remove the covers of vacuum sealed jars and the like, and punch pouring and/or air holes in evaporated milk cans and the like.

While the device is novel and useful in the combination of its parts and in sub-combinations thereof, certain parts individually possess novelty and utility. With this in view, it is another object of the invention to provide an opening device of this character having means for engaging the tongue of tearing or rip strip cans such as coffee cans, meat cans, et cetera, and to easily and quickly remove said tearing strip scored in the can body wall by winding said strip thereon.

It is a further object of the invention to provide an opening device of this character from which said wound strip may be easily and quickly removed so that said opening device may be re-used for this purpose.

Still another object of the invention is to provide a device of this character that is highly efficient and effective in opening cans of the tearing or rip strip type.

A further object of the invention is to provide a device of this character which will securely engage the tearing strip tongue of the can or container without the use of movable mechanical parts or clamping members.

A still further object of the invention is to provide a device of this character having novel and effective means for prying off the covers of vacuum sealed jars and the like.

Other objects of the invention are to provide a device of the present character, that is sturdy, that is extremely simple in construction, and that is easy to use, there being a minimum number of parts required.

Still another object of the invention is to provide a device of this character that is relatively inexpensive to manufacture.

Other objects and advantages of the invention will be brought out in the following parts of the specification.

Referring to the drawings, which are for illustrative purposes only,

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Fig. 1 is a side view of the device;

Fig. 2 is a view of the device as seen from the right and at right angles to Fig. 1;

Fig. 3 is a view of the device as seen from 3—3 of Fig. 1;

Fig. 4 is a sectional view of the barrel or stem of the device attached to the tearing strip tongue of a tearing or rip strip can;

Fig. 5 is a similar view after the device has been initially rotated and winding the tearing strip on the stem has begun;

Fig. 6 is a partial side view of another arrangement of the invention;

Fig. 7 is a view showing a cross section of the stem of the device of Fig. 6 attached to the tongue of a tearing strip can;

Fig. 8 is an enlarged view of a portion of the barrel or stem of the device illustrated in Figs. 1 to 5, wherein there are serrations or teeth along one edge of the lip for engagement with the surface of the tongue of the tearing strip; and

Fig. 9 is a cross section of the barrel or stem of another alternative arrangement of the invention.

Referring more particularly to Figs. 1, 2 and 3, there is shown an opening device embodying the present invention. As shown, the device is in the general shape of a key and comprises a barrel or stem, indicated generally at 15, a flange adjacent one end and indicated generally at 16, and a handle, indicated generally at 17. These terms have been used for convenience, as under some conditions the barrel or stem may be used as a handle, as will be more fully described hereinafter.

In Figs. 1, 2 and 3 the barrel or stem 15 is formed of sheet metal and comprises means for removing the tearing strip of tearing strip cans. The barrel or stem of these figures is of generally tubular construction, and the free end, opposite the flange 16, is of no greater cross sectional area than the flanged end. There are offset overlapping side edge portions which, where they overlap, are designated the inner and outer lips 20 and 21 respectively. With the overlapping construction above described, the barrel or stem is spiraled in cross section, the lips 20 and 21 being spaced apart or offset enough to receive the tongue of the tearing strip of a tearing strip can. This space between said lips provides a tearing strip tongue receiving opening 22 which extends longitudinally from the free end of the barrel or stem substantially the entire length thereof between said free end and the flange.

Adjacent the opposite end of the barrel 15 is the flange 16 which is annular in shape except

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for cut away portions 23, best shown in Fig. 3, on opposite sides of a pointed projection or punch 24 providing means for punching, pouring and/or air holes in evaporated milk cans and the like. The punch is located on the same side of the barrel or stem as the overlapping lips 20 and 21 thereof.

The handle 17 comprises a flat piece of sheet metal received in substantially diametrically disposed longitudinally extending notches provided therefor in the end portion 25 of the barrel or stem which extends beyond the flange 16, said handle being at substantially right angles to the punch. Bottle cap removing means is provided and comprises a cap receiving notch 26 in one edge portion of the handle 17. The notch 26 is located at the outer free or upper edge, as shown in Fig. 1, there being a cap engaging point 27 projecting into the notch 26 from the deepest end thereof, said point being shown in Fig. 1 as located at the upper left hand part of the handle. The outer handle edge is also provided with a curved portion or rocking hump 27a adjacent the shallow part of the notch 26, said hump rocking on the top of the bottom cap as the device is actuated during the cap removing operation.

At one side of the handle 17 is a vacuum seal jar cover lifter or cam 28, which extends outwardly beyond the adjacent outer edge of the flange 16 and comprises means for removing covers of vacuum seal jars and the like. As shown, one side edge of the handle 17 is notched at 29 to provide cover clearance when prying off a vacuum seal jar cover, as will be more fully described hereinafter, said cam being located in Fig. 1 at the lower right hand corner of the handle.

One side of the notch 29 is defined by an edge 30 of the cam 28, said cam edge being the upper one in Figs. 1 and 2, and is inclined inwardly and downwardly at an angle to the substantially horizontal lower edge 31 of said cam.

There is also tongue lifting means provided which is shown as located at the upper right hand end corner of the handle, and comprises a beveled portion 32 terminating in a thin edge 33.

Means for securing the barrel or stem, flange and handle together may comprise solder or the like. Alternatively these parts may be spot welded or the like, or some of the parts may be formed integrally. A rivet 34 may also be used to attach the handle 17 to the portion 26 of the barrel or stem. Or any other suitable means may be provided for securing these parts together. It may also be noted that the flange 16 holds the barrel 15 against expansion.

While the various parts of the device may be otherwise arranged and related to each other, there are certain advantages in the arrangement or relationship shown and described above, which advantages will be brought out hereinafter.

OPERATION

Removing tearing strips

In using the device to remove the tearing strip of tearing strip cans, the thin edge 33 of the tongue lifter is pushed beneath the tongue 36 (Figs. 4 and 5) of the tearing or rip strip 37 of a tearing strip can 38, said tongue being then raised and bent back so as to form an acute angle with the adjacent end of the tearing strip, as shown in Fig. 4, said tearing strip lying in substantially the same plane as the side walls of the can. When using the device to lift the tongue, the stem or barrel is held in the hand and the

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handle is grasped with the thumb and index finger. At this time the punch 24, which is located on the same side of the device as the overlapping lips, is on the under side and pointed away from the user.

The tongue 36 is then inserted into the opening 22 of the barrel 15, said barrel being pushed onto the tongue as far as possible so that the outer longitudinal edge 39 of the outer lip 21 is snugly received in the angle formed between the tongue 36 and the adjacent portion of the tearing strip 37. The tongue should be inserted into the opening 22 at such a point that the flange 16 engages or abuts against the upper or adjacent edge 40 of the can 38 so that said flange will ride on said edge 40. Should the flange be spaced from the adjacent edge of the can after the tongue has been inserted into the opening 22, the opener may be pushed or moved longitudinally until said flange abuts or touches said can edge. This may be easily done as the tongue will easily slide longitudinally in the opening 22.

When inserting the tongue in the opening 22 it is to be noted that this may be done at any location along the barrel or stem, an advantage in that different types of tearing strip cans have the tearing strip spaced differently from the adjacent can end. Thus the device is adaptable to a wide variety of tearing strip cans. It is also to be noted that when inserting the tongue in the opening 22, the tongue bends somewhat to follow the cross sectional curvature of said opening, this curvature of the opening and tongue being shown in Figs. 3, 4 and 5, and the tongue and adjacent end portion of the tearing strip form a hook which is hooked over the edge 39 of the lip 21. Further, as the barrel or stem is hollow, there is ample room for the free end portion of the tongue to be accommodated. This is of advantage where the tongue is rather long, as in some cans, it being well known that these tongues vary in length in different types of cans. The tubular construction of the barrel or stem also adds strength thereto, which is of advantage where the stem is of considerable length for opening sardine cans and the like.

After the opener has been attached to the tongue 36, as above described, said opener is rotated in a clockwise direction, as indicated by the arrow 41 in Fig. 5, the device being shown in this figure as having been initially rotated so that the tearing strip end adjacent the tongue has begun to wind on the barrel 15. Further rotation of the device, which is effected by the handle 17, will complete the removal of the tearing strip from the can, said strip then being fully wound or coiled on said barrel.

The wound tearing strip may then be readily removed from the barrel by sliding the coil from the free end thereof. When the coiled tearing strip is being removed from the barrel the tongue will slide in the opening 22.

It has been found that when the tearing strip has been completely removed from the can, said strip will uncoil itself slightly, due to the fact that the material has some resilience. Hence, the coil will be free to slide on the barrel or stem without binding, and inasmuch as the opening 22 is of sufficient width to allow the tongue to slide therein, the coiled tearing strip may be readily slipped from the barrel of the device.

This slight unwinding or uncoiling of the wound up tearing strip can occur because the barrel is of substantial cross sectional size or area, and the periphery is generally rounded so

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that there is no sharp creasing or folding of the tearing strip as it is wound on the barrel.

When the tongue has been inserted into the opening 22 between the overlapping edge portions or lips 20 and 21, said tongue lies in a plane substantially parallel with the plane of said lips and is given lateral support on each side thereof over substantially the entire areas of said tongue sides. In other words, the tongue is given lateral support over both sides from the outer free edge 39 of the lip 21 to the inner free edge 45 of the lip 20. The free end portion or tip of the tongue may extend into the barrel beyond the free edge 45, and because the barrel or stem 22 is tubular in character such tip can be accommodated so that the barrel may be pressed onto the tongue as above described, even though the tongue is substantially longer than the width of the lips.

Hence, because of the lateral support given the tongue by the lips 20 and 21, the tendency of the tongue to straighten out and slip from the opening 22 when the device is actuated is substantially eliminated. This, combined with the sharp bend of the tongue at its base to form a hook, provides means whereby said tongue is securely held so that the tearing strip may be torn from the can body. It is to be understood that, while the width of the opening 22 is sufficient to permit ready insertion of the tongue therein, the spacing of the lips 20 and 21 from each other is close enough to snugly embrace said tongue. Also, as the tongue itself is not folded over or crimped beyond the above referred to bend at the base, said tongue will readily slide longitudinally in said opening 22 when the coiled tearing strip is removed from the barrel or stem 15.

It is to be noted that should the tearing strip inadvertently slip from the roll as said strip is being wound on the barrel or stem, the remainder of the strip will be picked up by the adjacent part of said barrel and there will be no material reduction of the efficiency and effectiveness of the device because the cross sectional area of the barrel is of substantial size. Moreover, the strip when thus wound may be easily removed from the barrel or stem in the manner already described.

The flange 16, when resting or riding on the adjacent edge of the can, serves as a stabilizer or guide to minimize variations in the inclination or movement of the barrel or stem longitudinally so as to facilitate or insure even winding of the tearing strip on the barrel. When thus used, the flange 16 tends to maintain the desired relationship of the opener with respect to the can and the tearing strip, and it is to be noted that the point 24 of the punch cooperates with the rest of the flange in maintaining said relationship.

Punching holes

When using the device for punching holes in cans, the barrel or stem 15, and the handle, are held with the fingers of the user's hands, and pressure is exerted on said barrel and on the handle 16, by the thumbs of the user. As the punch 24 is located at the overlapped side of the barrel or stem 15, the smooth side of the barrel is presented for pressure by the user's hands when the device is used for punching.

Removing covers

When using the device for removing covers from jars such, for example, as those that are vacuum sealed, the lifter or cam 28 is inserted flatwise into the space between the under side of

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the cover and the adjacent outwardly extending flange of the jar. The device is then rotated so that the upper edge 30 of the cam, as shown in Fig. 1, engages the under edge of the cover and the lower edge 31 fulcrums on the jar flange. Further rotation of the device in the same direction will effect lifting up or prying off of the cover.

Due to the inclination of the edge 30 of the cam, said cam is urged inwardly toward the neck of the jar instead of tending to slip from the space between said cover and edge of said jar flange.

In using the device for removing jar covers, the barrel or stem 15 is held in the user's fingers or hand, and the leverage applied thereby. Or, in holding the device for this operation said stem may be held by the middle, ring and little fingers while the handle is held by the index finger and thumb which are disposed on the opposite side of the flange.

Removing bottle caps

In removing bottle caps the device is placed on the cap with the point 27 beneath the lower edge of said cap, the barrel or stem of the device being used as a handle to pry off the cap.

Referring to the arrangement of Figs. 6 and 7 of the invention, the barrel or stem, here indicated generally at 15a, is tubular and is provided with flange 16 and handle 17. A tongue receiving slot 50 extends from the free end of the barrel to a point adjacent to the flange 16. Also the barrel or stem 15a tapers from the flanged end toward the free end which is somewhat smaller in diameter than the portion of said barrel adjacent said flanged end. This tapered arrangement facilitates removal of the tearing strip from the barrel when said strip has been wound thereon.

In using this arrangement of the invention the slot or tongue receiving opening 50 is but slightly wider than the thickness of said tongue which is inserted into the slot 50 and the barrel rotated to wind the strip thereon. Where the tongue is of sufficient length the free tip thereof may be engaged with the inner wall 51 of the barrel at a point substantially opposite the slot 50, and due to the curvature of the wall 51 the tongue tip is held against material lateral or swinging movement. This is due to the fact that the radius of the tongue is longer than the radius of the barrel or stem.

Referring to Fig. 8, the inner side of the free edge portion of the lip 21 is provided with teeth or serrations 55 which aid in gripping the tongue of the tearing strip and in preventing slippage of the tongue from the opening 22 when the device is used in opening tearing strip containers. The teeth 55 tend to dig into the tongue as the device is initially rotated, and to hold said tongue securely against longitudinal slippage. It has been found that these serrations do not interfere with removal of the strip from the barrel or stem 15 after said strip has been wound or coiled on said stem.

Fig. 9 shows an alternative stem arrangement, said stem being indicated here at 15b, and is shown as being a solid bar or rod, rounded in cross section. The stem or barrel 15b has a tearing tongue receiving opening or slot 60 which extends longitudinally from the free end of the stem as in the other disclosed arrangements. The slot 60 extends inwardly of the stem substantially diametrically thereof, but does not ex-

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tend entirely across said stem, there being a portion or wall 61 which closes one side of the slot. This arrangement provides added strength to the stem and prevents twisting thereof under torque stress, which is desirable for longer types of stems for use in opening certain types of tearing strip cans such as, for example, sardine cans.

As in the arrangement having the overlapping lips, the side walls of the tongue receiving opening 60 are spaced closely enough together to allow for but very slight lateral movement of the tongue, but said opening is of such size as to permit the tongue to readily enter same. The curving of the tongue between the overlapping lips also aids in holding the tongue in the opening 22 during the opening operation, but permits ready movement of said tongue longitudinally in said opening.

While the teeth 55 are shown only in Fig. 8, it is to be understood that teeth may be provided along the gripping edge of the opening 50 in the device shown in Fig. 6, and along the gripping edge of the opening 60 of the device shown in Fig. 9.

I claim:

1. In a device of the class described, including: a generally tubular stem of sheet metal, spiral in cross section, having overlapping longitudinal edge portions spaced apart substantially the width of the thickness of a tearing strip tongue; teeth along the free edge of the outer overlapping edge portion; and means for rotating said stem.

2. In a device of the class described: a generally tubular stem of sheet metal having overlapping longitudinal edge portions spaced apart sufficiently to provide an opening extending from one edge of said stem for operable reception of a tearing strip tongue; a plurality of teeth along the edge of one of said edge portions and adapted to engage said tongue; and means for rotating said stem.

3. In a device of the class described: a generally tubular stem of sheet metal having over-

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lapping longitudinal edge portions spaced from each other a distance slightly greater than the tongue of a can tearing strip, the opening formed by said spaced edge portions extending from one end of said stem, said edge portions providing said tongue with lateral support through a substantial length thereof when said tongue is disposed in said opening; teeth along the inner side of the outer overlapping edge portion; and means for rotating said stem.

4. In a device of the class described: a generally tubular stem of sheet metal having overlapping longitudinal edge portions spaced from each other a distance but slightly greater than the thickness of the tongue of a can tearing strip, the opening formed by said spaced portions extending from one end, said edge portions being arcuate in cross-section and substantially parallel with each other so as to bend said tongue and place same under tension when said tongue is in said opening; teeth along the longitudinal edge of the outer overlapping edge portion; and means for rotating said stem.

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