The invention relates to improvements in keys for opening containers provided with a tear strip, and more particularly to so-called paper containers having metal end closures one of which has a narrow tear strip.

According to present practices a key is commonly provided with containers of the tear strip type, said key having a manipulating portion and terminating in a shank having a slot adapted to accommodate the tongue or free end of a tear strip. By inserting the tongue in the slot and turning the key, the metal forming the tear strip is wound or rolled upon itself about the shank of the key. Ordinarily the tear strip, especially of the narrow kind, is not wide enough to be self-supporting when wound about the shank of the key, and usually rolls very unevenly upon itself, frequently breaking off, running out of its scored or weakened areas, and generally making the operation of opening the container a difficult and exasperating one.

The primary object of my invention is to provide a reliable tear strip opener designed to insure the uniform winding of the tear strip upon itself for the entire length thereof, in opening a container of the tear strip type.

Another important object is the provision of a container opener having an element adapted to be continuously supported on the peripheral edge of a can body or metal end closure to prevent the winding portion of the opener from being laterally displaced with relation to the tear strip, thus insuring the even rolling of the tear strip upon itself.

Another object of the invention is the provision of a key structure designed to lie flat on the top of the container and removably secured thereto, the component parts of the key being capable of easy assembly, one of said parts being a manipulating member, and another part constituting, when assembled, a supporting shoulder for controlling the locus of the key about the peripheral edge of the container during the opening thereof.

Another object is the provision of a key having a manipulating portion adapted to be attached to the end closure of a container and carrying a supporting member designed to lie normally in the same horizontal plane of the manipulating portion, but easily inserted or removed therefrom, for assembly or disassembly, and at the same time securely locked in place against dislocation in the ordinary handling of the container during its sealed package life.

Other objects of the invention will manifest themselves as the description proceeds, which objects are attained by the construction illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view, with part broken away, of a container of the tear strip type having my opener attached to the top closure thereof.

Fig. 2 is an enlarged fragmentary elevation of the terminals of the tear strip formed on the outer wall of the end closure;

Fig. 3 is an enlarged fragmentary sectional view taken on the line 3--3 of Fig. 2, showing a detail of the tear strip;

Fig. 4 is an enlarged elevation, with part of a tear strip container in section, illustrating the application of my opener;

Fig. 5 is an exploded perspective view of the elements, embodying the invention, shown in the order of their arrangement for attachment;

Fig. 6 is a perspective view showing the assembly of the key elements as used in removing the tear strip; and

Figs. 7 and 8 are perspective and elevational views respectively of modified forms of the key contemplated by the present invention.

The present invention contemplates a key structure especially adapted to open containers of the tear strip type and is particularly designed to function efficiently with narrow tear strips. The construction embodies a manipulating member having a head portion terminating in a shank portion provided with a slot having a cross-sectional area substantially corresponding to the cross-section of the tear strip. A supporting or shoulder member, preferably detachable from the manipulating member, is adapted to be attached to or inserted over the shank portion of the manipulating member and abut against the head thereof. The shoulder member may take the form of a disc having a central aperture adapted to accommodate the shank portion and fit snugly thereon and in a plane normal thereto. The shoulder member is designed to utilize the edge or rim of the end closure as a track to prevent the lateral displacement of the key with respect to the tear strip, and by limiting the size of the slot in the shank to substantially the cross-sectional area of the tear strip, and regulating the spacing of the slot with respect to the head portion of the manipulating member so that the slot is oppositely disposed to the tear strip, the supporting shoulder is adapted to control the locus of the key about the peripheral edge of the container, thus insuring uniform
winding of the tear strip upon itself for its entire length.

Although my opener is adapted to be used with any type of tear strip on any kind of container, I have chosen to illustrate it as applied to the opening of a fibrous container having metal end closures such as set forth in my co-pending application, Serial No. 297,802, filed October 4, 1959, assigned to the present assignee and relating to paper containers having a narrow tear strip adapted to leave the cover hingedly attached to the container body.

Referring to the drawings, more particularly Figs. 1 to 4, there is shown a tubular fibre container body 1 having a metal end or top closure designated generally by the reference character 2.

The metal closure 2 has a substantially flat top surface with a central slightly raised disc portion 3 and a central depression 4, said top surface being below or sunk within the end of the body 1, by means of a peripheral cylindrical wall 5 engaging the inner wall of the body 1 and merging at the top in an outwardly projecting top flange 6 turned downwardly over the rim of the body 1 and back under at the outer circumference to form an overhanging ledge 7, the inner end of which is bent downwardly to form a wall 8 engaging the outer wall of body 1, and terminating at the bottom in a seal 9 formed with an under and upward curled formed in the outer wall of the body 1.

The outer wall 3 is provided with parallel scorings 11 and 12 which define a weakened area constituting a narrow tear strip 13. To provide a hinge portion 14, the scorings 11, 12 do not extend entirely around the wall 5, but may terminate at opposite ends in convex, circular grooves 15 and 16. To provide for the facile starting of the tear strip 13, one end thereof may be struck up in any suitable manner during manufacture, which end may be pried up to serve as a tongue 17 which feature is hereinafter more fully described.

The key structure may comprise a manipulating member 20 and a shoulder member 21. The manipulating member 20 consists of a head portion 22, preferably triangular-shaped, with one side of the triangle constituting the base and terminating in a shank portion 23, provided with the conventional flattened sides and having a rectangular slot 24 made therein thereof.

The cross-sectional area of the slot is slightly greater than the cross-section of the tear strip 13, so as to accommodate the tongue 17, and at the same time insure a comparative snug fit therewith. The head portion 22 is provided with an aperture 25, which is inherently formed if the manipulating member 20 is fabricated from wire or rod stock, such as illustrated in the preferred embodiment of the invention.

The shoulder member 21 may take the form of a disc having the same general contour as the contour of the aperture 25, and the thickness of the disc is such that it affords adequate support for the manipulating member 20, but preferably is sufficiently thin as to come within the diameter or thickness of the material comprising the manipulating member, thus eliminating a possible source of dislocation if a relatively tight fit between the head portion 22 and the shoulder member 21, the latter is provided with beveled edges 26 and the shoulder is inserted in the aperture 25 with the bevel inclined upwardly. This arrangement locks the shoulder member 21 in the manipulating member 20 and causes it to lie in the same plane as the head 22, thus permitting the key structure to be secured to the closure 2 in a flat position.

In order to attach the shank member 21 to the manipulating member 20, the former is provided with an aperture 27 of the same general contour as the cross-section of the shank 23, and engages the latter so as to be free from substantial play and rotatable with the shank in a comparatively fixed relation. As a matter of design, the aperture 27 may be centrally located and is preferably parallel with the side constituting the base of the head portion 22, which latter may for convenience be equilaterally shaped. The area or size of the shoulder member 21 is determined by the diameter of the tear strip when rolled about the shank 23. That is to say, the minimum diameter of the disc or shoulder member 21, at its smallest radius, should slightly exceed the maximum diameter of the rolled tear strip.

From this standpoint, the size of the shoulder member 21 should be standardized for a given length of tear strip, or perhaps designed to cover a limited range of lengths of tear strips, to insure economies of materials employed in the key elements and successfully accomplish the objects of the invention. This feature will manifest itself more clearly from the description hereinafter of opening the container.

To fasten the key to the cover 2, the projection welding method may be employed which consists in providing projections on the shank 23 below the slot 24, and electrically welding at the point of contact of said projections. Another convenient way of attaching the key to the cover 2 is by soldering. There is sufficient resiliency between the attached manipulating member 20 and the cover 2 to permit the insertion therebetween of an insulating diaphragm. The disc 30 may be of cardboard paper, or the like, and have suitable instructions printed thereon. Arranged on the margin thereof may be directions for removing the key from the cover, pushing out the shoulder disc, and also an illustration of how to assemble these elements so as to open the container. The instruction disc 30 has a central post 31 adapted to straddle the shank 23, and is held in place by the tension exerted by the key being sprung slightly outward when the disc 30 is inserted into position as shown in Fig. 1.

The operator of the key will be best understood by reference to Fig. 4 in which the key and a partly rolled tear strip are shown in exaggerated proportion with respect to the container in order to illustrate more clearly the relationship of the key structure and manner it is supported on the rim of the cover 2. The assembly of the key was effected by lifting the free end of the manipulating member 20, as per instructions, thus breaking the seal normally fastening the key to the cover 2. The next step was to remove the shoulder member 21 by pushing it from the key head 22, which is easily accomplishable by the action of the beveled edges of the shoulder member 21.

The shank 23 of the key was then inserted in the slot 27 of the shoulder 21, and the latter was pushed to the limit of its upward movement which is just short of contacting the base side of the key hereinbefore. To ensure this, the key was provided with a knife edge 32, formed by cutting a bevel surface across the end of the shank. By employing the knife edge 32 to pry loose the tongue 17, the latter may be inserted in the slot 24 of the shank 23. The position, or location, of the slot 24 on the shank 23, as described above, is...
such that it is oppositely disposed to the tear strip 13 when the shoulder member 21 is in face-to-face contact with the rim 6 of the cover 2. By turning the key head 22 in a clockwise direction, which may be readily done with the fingers, the tear strip 13 is rolled about the shank 23, and as the shoulder 21 may be easily kept in engagement with the rim 6, thus avoiding any lateral displacement of the slot 23, with respect to the tear strip 13, the locus of the slot 24 is definitely defined with respect to the peripheral edge of the container. This insures that the tear strip 13 will be wound evenly upon itself for its entire length.

When the tear strip 13 reaches its opposite end 16, it is easily broken off due to the convex groove 16 forming part of the scoring. The un-scored portion 14 of the cover 2 functions as a hinge for operating the lid formed on the container by removal of the tear strip.

Fig. 7 is a modification showing a key structure having the shoulder member 21 formed integrally with the manipulating member. This is accomplished by continuing the end of the wire or rod from which the manipulating member 20 is formed so that it may be coiled about the shank 23 as a closed ring 33 occupying a plane normal to the shank 23, and suitably positioned with respect to the location of the slot 24 as to bring the latter opposite the tear strip 13 when the ring 33 is resting or supported on the rim 6.

Fig. 8 shows a further modification of the key structure. In this modification, the shoulder member 21 is triangular-shaped, the apex of the triangle forming the junction with the head portion 22, and the opposite or base side 34 of the triangle constituting the supporting surface for engagement with the rim 6.

It is obvious that other modifications will suggest themselves to those skilled in the art, but it is my desire to cover all such modifications as come within the terms of the appended claims.

In my use of the term "disc" as applied in describing the shoulder member 21, I employ this term in its broad meaning as indicating any plate member of relatively thin sheet material, irrespective of its shape or configuration; also any means equivalent thereof such as shown in Figs. 7 and 8. It is apparent that this element may be made from any suitable material such as fibre, cardboard or sheet metal, and its association with the manipulating member forming part of the key structure may be effected in any form of assembly; i.e., as a separate detachable element or as an integral part of the manipulating member. The key may also be furnished as separate elements constituting a kit or assembly unit contained in an envelope or like package, instead of being attached to the end closure of the container.

What is claimed is:

1. A key for opening a container having a tear strip comprising a manipulating element having a hollow triangular-shaped head portion terminating in a shank normal to one side of the head portion, a triangular-shaped plate member adapted to fit in the hollow of the head portion and frictionally engage the adjacent edges of the triangular head portion, said plate member being provided with a centrally located slot adapted to engage the shank of the head portion, the distance of said slot with respect to the perimeter of said plate member being in excess of the radius of the coiled tear strip when completely rolled on the shank portion, whereby the plate member completely covers and extends beyond the coiled strip.

2. A key for opening a container having a tear strip comprising a manipulating element having a hollow head portion terminating in a shank extending from the head portion, a plate member adapted to fit the hollow of the head portion and be retained therein, said plate member being provided with a centrally located slot adapted to engage the shank of the head portion when inserted therein, the distance of said slot with respect to the perimeter of said plate member being in excess of the radius of the coiled tear strip when completely rolled on the shank portion, whereby the plate member completely covers and extends beyond the coiled strip.

3. A key for opening a container having a tear strip comprising a manipulating member having a head portion and a shank portion, a plate member normally carried within the head portion of the manipulating member and readily detachable therefrom, said plate member being provided with a centrally located slot adapted to engage the shank of the head portion when inserted therein, the distance of said slot with respect to the perimeter of said plate member being in excess of the radius of the coiled tear strip when completely rolled on the shank portion, whereby the plate member completely covers and extends beyond the coiled strip.

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