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CONTAINER OPENING DEVICE

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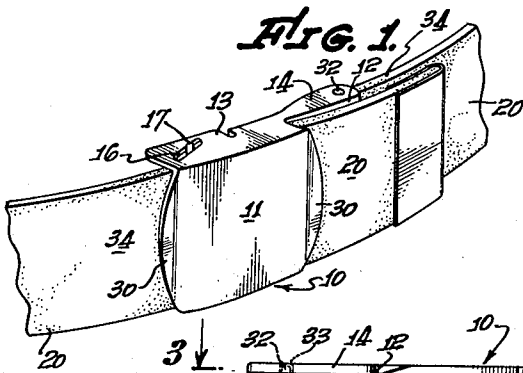


Fig. 4

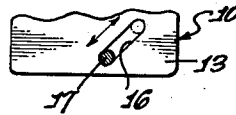


Fig. 2

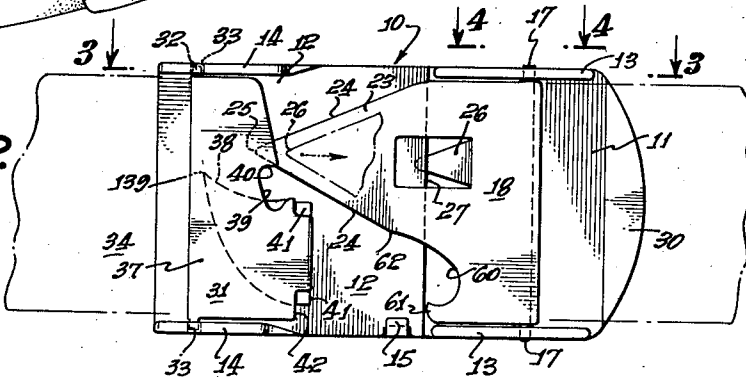


Fig. 5

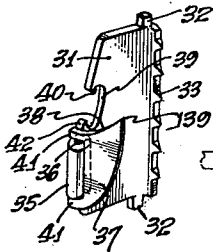


Fig. 3

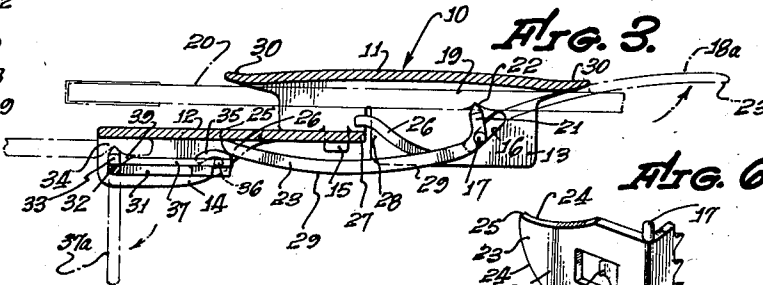


Fig. 6

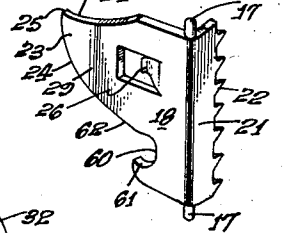


Fig. 7

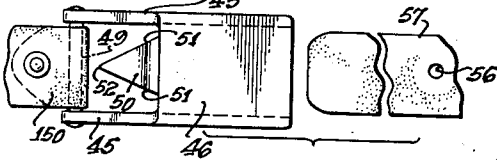


Fig. 8

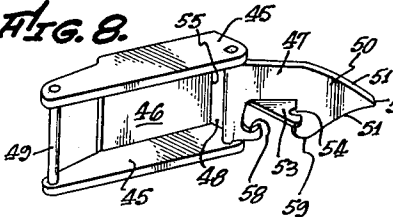
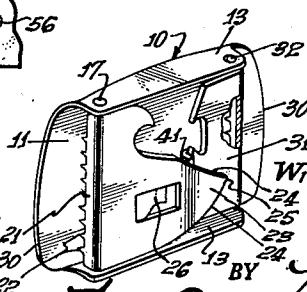


Fig. 9



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2,807,085

CONTAINER OPENING DEVICE

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4 Claims. (Cl. 30—123)

This invention has to do with improvements in belt buckling apparatus, and with special reference to buckles of the type adapted for retaining portions of belts in coupled condition by surface gripping action upon the belt portions. More particularly, the invention is directed to novel improvements in belt buckle hinges, the improvements having for their general object and purpose to increase the utility of the buckling apparatus by so constructing the buckle hinge portions as to fit them for use in opening containers as well as for retaining belt end portions, the particular structure of the hinge portions accommodating the various uses in cooperation with the remaining buckle structure.

The ideas upon which the present invention is founded have for their origin the desirability of making available to campers, army personnel, and all those who find themselves living under field conditions various types of readily accessible container opening equipment. In the past, it has been found necessary to carry a plurality of special openers of different types to accomplish, for example, cutting around the edges of cans, puncturing cans, lifting off bottle caps and the like, the number of openers multiplying the likelihood of losing or misplacing them.

The present invention has for its general object to provide a single apparatus combining the functions of belt buckling and opening of various types of containers in such a way that the parts of the apparatus cooperate in the two functions referred to, and more importantly, the container opening parts are readily accessible when needed, and when not needed are confined in concealed out-of-the-way position at the rear of the buckle structure. More specifically, the invention contemplates the provision of levers formed in such a way as to serve for belt retention while in one position, and for container opening while in another position, the levers cooperating with the remaining buckle structure to achieve these purposes, as by transmitting leverage from the buckle structure to container opening wings carried by the levers and by holding a belt in coupled condition with respect to the remaining buckle structure. As will appear, in accomplishing these objects I provide at least one lever pivotally mounted between the sides of the buckle to form a belt opening, the lever having a projection formed thereon to engage the belt when the lever is in retracted position, and the lever also including a wing adapted to cut into, puncture, or lift appropriate container parts when the lever is in extended position projecting away from the body of the buckle. I may also provide two such levers in spaced location for cooperative engagement with opposite end portions of a belt while in their retracted position, the levers also being formed for various container opening purposes when either is extended.

In its more specific structural aspects the invention aims to provide one or more lever means of the above type which present smooth surfaces facing rearwardly from the buckle when the levers are in retracted position, in order not to discomfort the buckle wearer, the levers having the various container opening wings and belt en-

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gaging projections formed on their inner sides, all in such manner as to perform the objects for which they are intended. As an additional feature of the invention, the wings formed on the levers are caused to interlock, so that one of the levers may be held in retracted position by the other during belt gripping. Thus the invention accomplishes the combined results of belt buckling and container opening in such manner as to lend substantially increased utility to the apparatus and to render benefits to campers in the manner referred to.

The aforementioned features and objects of the invention as well as additional aspects together with the details of a typical and illustrative embodiment will be understood more fully from the description of the accompanying drawings, in which:

Fig. 1 is a pictorial view of the front of the belt buckling apparatus and belt retained thereby;

Fig. 2 is an enlarged rear view of the apparatus shown in Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary view of a portion of the apparatus shown in Fig. 2 and taken on line 4—4 thereof;

Fig. 5 is a pictorial view of one of the levers shown in Fig. 2 and 3;

Fig. 6 is a pictorial view of the other of the levers shown in Figs. 2 and 3;

Fig. 7 is a front view of a modified form of the apparatus;

Fig. 8 is a pictorial rear view of the apparatus shown in Fig. 7; and

Fig. 9 is a pictorial view of another modified form of the apparatus.

Referring to Figs. 1 through 6, the belt buckling and container opening apparatus comprises a body 10 having a front plate 11, a rear plate 12 and elongated spaced sides 13 and 14, the former extending rearwardly from the front plate to join it to the rear plate and the latter extending rearwardly from the rear plate. The body may typically, though not necessarily, be formed from a sheet metal stamping comprising brass, steel or any other suitable material, which is subsequently formed in a die to give the final shape shown in the drawings, wherein tab 15 is shown projecting from one of the sides 13 and folded over the rear plate 12.

Near the ends of sides 13 there are formed a pair of angled slots 16 adapted to receive therethrough ears 17 carried by a cross-member 18, the body of which forms a lever comprising a sheet of the same or similar type material composing body 10, and formed to have a shape adapting it for the belt retention and for can opening purposes. It is contemplated that ears 17 may be carried by the cross-member 18 and formed integrally therewith, or may be formed on a separate cross-member to which the lever is joined either rigidly or pivotally, it being necessary that the lever have swingable movement into retracted position, as shown in Figs. 2 and 3, to the rear of plate 11 and also into extended position projecting away from body 10, as indicated by the dotted lines 18a shown in Fig. 3.

The lever 18 forms along with plate 11 and sides 13, an opening 19 therebetween through which a belt end portion 20 may pass substantially unidirectionally, the particular structure being intended to receive the free end of a belt for retention purposes. Formed on the inner end 21 of the lever between opposite sides 13 are a series of projections comprising a serration 22 engageable with the rear face of the belt when the lever is in its retracted position shown in Fig. 3. In that condition, attempted withdrawal of the belt from the apparatus is resisted by the serrations 22, which are caused to dig more deeply into the rear face of the belt by virtue of pivoting of the serrations into the belt and engagement of the

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outer end 23 of the lever with the rear face of plate 12. The angularity of the slots 16 extending toward plate 11 and toward the direction of belt withdrawal contributes to the resistance to belt withdrawal offered by the lever since the slots tend to guide ears 17 and serration 22 into the rear face of the belt as the latter is withdrawn.

As referred to above, the outer portions 23 of the lever comprises a wing having a somewhat arcuate shape curving toward plate 12 in the position shown in Fig. 3, the wing also having a tapered configuration including tapered opposite sides 24 extending toward a point 25 engaging plate 12 when the lever is in retracted position. There is also formed on the lever a hook 26 projecting from the inner side of the lever toward plate 11 as shown in Fig. 3, the end of the hook being adapted to underlie the end 27 of plate 12 in such position as to hold the lever against outward pivoting during belt retention. In this connection, it will be observed that hook 26 forms a clearance 28 adapting the hook to be moved toward plate 12 a sufficient distance to allow disengagement between serration 22 and belt end portion 20 by virtue of outward camming of the lever by the angularity of slots 16, whereby the belt may be withdrawn from the apparatus, and after which the lever mounting the hook may be disengaged from plate 12, allowing outward pivoting away from the buckle body.

When rotated into the position shown by the dotted lines 18a, the outer surface 29 of the lever engages a shoulder 30 formed by an overhanging portion of plate 11 to resist further rotation of the lever. In this position, hook 26 may be inserted under the beaded edge of a can and the pointed end 25 of the wing may be caused to puncture the top of the can by turning force transmitted from the hand grasped body 10 through the shoulder 30 and the lever 18. For lifting bottle tops, an undercut 60 is formed in one side of the lever to form a wing 61 in the form of a lip engageable with the lower edge of such a top, a shoulder 62 forward of the undercut serving to engage the top surface of the bottle top and providing a fulcrum during the lifting operation.

A somewhat similar cross-member forming lever 31 is connected between sides 14 by ears 32 extending through openings 33 formed in the sides in rearward spaced relation to plate 12. Lever 31 may also comprise a sheet metal stamping formed to have serrations 33 engageable with the opposite end portions 34 of the belt when the lever 31 is in retracted position shown in Fig. 3. In that condition, the lever extends rearwardly of plate 12 and substantially parallel to the plane of the body 10, it being maintained against outward turning away from plate 12 by the pulling of end portion 34 of the belt against serrations 33 tending to rotate the lever counterclockwise as shown in Fig. 3. It will also be observed that lever 31 has a turned end 35 overlying the point 26 of lever 18 to retain or lock the latter against outward pivoting away from body 10, and thus providing a safety catch or safety position.

Turned end 35 provides a pivot bearing through which extends a pin 36 carried by cutter blade 37, the latter being swingable into the position shown in Fig. 5 and by the dotted lines 37a in Fig. 3 for cutting engagement with the top or bottom end of a can. For this purpose, the cutting blade includes an arcuate cutting edge 38 terminating in a point 139 adapted to puncture a can shell and to sever the metal around the edge of the can as a result of repeated turning movement transmitted to the blade through body 10, ears 32, and lever 31, all of which are rotated by hand. A recess 39 formed in the edge of the lever 31 provides a pointed shoulder 40 adapted to engage the underside of the beaded edge of the can and thereby to provide a fulcrum about which turning movement is transmitted to the blade 37. Shoulders 41 are formed on the blade 37 for engagement with the edge 42 of the lever 31 to limit outward pivoting of the blade away from the lever to hold it approximately normal

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to the plane of lever 31 in position for a cutting operation.

In connection with the complete structure of the levers and the body, it will be observed that the outer faces of the levers when in retracted position present substantially smooth surfaces facing the rear of the apparatus so as not to interfere with the comfort of the buckle wearer, from which position the levers are adapted to be swung outward to free the container opening elements for their intended use.

In the example shown in Figs. 7 and 8, a pair of elongated sides 45 extend rearwardly from a front plate 46 connecting the sides, and a cross-member forming a lever 47 is pivotally connected between the sides near the end of the buckle in rearward spaced relation from the plate 46 to form a belt receiving opening 48 therebetween. A second cross-member 49 is connected between the sides at the opposite end of the buckle for joining the fixed end 150 of a belt to the buckle structure.

Lever 47 is somewhat similar to previously described lever 18 in that it is formed to have a wing 50 at its outer end, including tapered opposite sides 51 terminating at a point 52 for cutting a tapered hole in a can. Between the axis of pivoting of the lever and point 52 there is formed a projection 53 having an undercut portion 54 facing the point 52 and spaced from the inner side of the lever for engagement with the beaded edge of a can, to provide a fulcrum for lever pivoting during container opening. For this purpose, the lever is swung into extended position similar to that shown in connection with Fig. 3, so that the outer face thereof engages shoulder 55 provided by plate 46, whereby leverage may be transmitted from the buckle body to lever 47, the buckle body being gripped by hand.

Lever 47 is also adapted for belt retention by virtue of interengagement of the end of projection 53 with a hole 56 formed in the end portion 57 of the belt during the time that the lever is swung into retracted position behind the plate 46 and substantially parallel to the plane of the buckle body structure. For lifting bottle tops, an undercut 58 is formed in one side of the lever to form a wing in the shape of a lip engageable with the lower edge of such a top, a shoulder 59 forward of the undercut serving to engage the top surface of the bottle top and providing a fulcrum during the lifting operation.

The modification shown in Fig. 9 is substantially similar to the embodiment described in connection with Figs. 1 through 6, with the exception that both levers 18 and 31 are hinged between sides 13 and near opposite ends of the buckle structure in rearward spaced relation from front plate 11. In other words, rear plate 12 and sides 14 shown in Figs. 2 and 3 are dispensed with, so that opposite ends of a belt are similarly gripped by the lever serrations directly behind front plate 11 during the time that the levers are in retracted position. The levers 18 and 31 may be swung outward in opposite directions away from the body of the buckle for cooperative handling therewith during a container opening operation, as previously described. For this purpose, shoulders 30 at opposite ends of the front plate 11 serve as stops to resist further pivoting of the levers when they have been brought into position for container opening. The structure of the levers themselves is the same as shown in Figs. 5 and 6 and described in connection therewith.

I claim:

1. A container opening assembly, comprising a channel shaped body including a pair of flanges and a cross plate forming a space at the inside thereof, lever means in retracted position in said space and extending in a plane facing said plate, means connecting said lever means to the body flanges for swinging movement away from said space into extended position and in abutting relation with the body so that manually exerted leverage is trans-

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missible from the body to the extended lever means, and a container opening element carried by said lever means for opening engagement with a container when the lever means is in said extended position, said lever means and plate forming a relatively narrow opening for receiving a belt therethrough.

2. A container opening assembly, comprising a channel shaped body including a pair of flanges and a cross plate forming a space at the inside thereof, lever means in retracted position in said space, means connecting an end portion of said lever means to said flanges for swinging movement of the lever means away from said space and into extended position in abutting relation with the body so that manually exerted leverage is transmissible from the body to the extended lever means, and a container opening element carried by said lever means facing said space in said retracted position and for opening engagement with a container when the lever means is in said extended position, said end portion and plate forming a relatively narrow opening for receiving a belt therethrough.

3. The invention as defined in claim 2 in which said end portion extends toward the plate in said retracted position for gripping engagement with the belt extending through said opening.

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4. The invention as defined in claim 2 including a projection carried by the lever means and extending away from the plane thereof in spaced relation to said element for lifting engagement with a container shoulder when the element is forced against the container top, said projection being confined in said space between the flanges when said lever means is in retracted position.

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