OPENING DEVICE FOR CLOSED OR SEALED TINS AND CONTAINERS

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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To all whom it may concern:

Be it known that we, William Selby-Fayers and Ernest Bayer Gates, subjects of the King of England, both residing in Surrey, England, have invented certain new and useful Improvements in Opening Devices for Closed or Sealed Tins and Containers, of which the following is a specification.

This invention relates to opening devices for closed or sealed tins and containers.

An opening device according to the present invention comprises in combination a cutting wire to extend through a sealed or other hole in a wall (such as an end wall or lid) of the container, a body (such as a metal body) secured to or formed on that part of the wire which is to be within the container, said body being greater in at least one of its dimensions measured transversely to the axis of the wire than the width of the hole aforesaid or of the cut to be made by the wire, and means (for example, a ring or other handle) at the outer end of the wire to permit of the device as a whole being drawn bodily by hand to effect the cutting operation.

The wire aforesaid is of such strength and material as to be capable of cutting through the material of the container and conveniently it may be passed through the hole in the container during the manufacture of the latter. In the case of tins which are to be kept air-tight the hole is sealed around the wire conveniently by soldering.

In the preferred construction of opening device made according to the invention the body aforesaid, which is attached to that part of the wire which is to be within the container is characterized in this that from the place on the wire at which the body and wire are attached to one another the said body is extended both upwardly (that is, towards that end of the wire which is to be outside the container) and outwardly. By this upward and outward extension the upper end of the body and the wire within the container are remote from one another and there is a substantial clearance between the cutting portion of the wire and the uppermost or outermost portion of the body. The provision of this clearance is important.

A body in the form of a cup into the concavity of which the inner end of the wire extends and is attached in the middle of said concavity to the cup fulfils the above-mentioned requirements as to clearance.

The present invention also includes the combination with a can upon which is an outer readily-removable lid (such as a lever-lid) and in which there is an inner lid sealed in the can below the outer lid, of an opening device as above described whereof the wire extends through a hole in the inner lid and the means aforesaid (such as a ring-shaped handle) at the outer end of the wire together with that part of the wire which is outside the inner lid are contained wholly between the outer and inner lids aforesaid.

Some preferred forms of the invention will now be described by way of example with reference to the accompanying drawings, in which—

Figure 1 is an elevation to an enlarged scale showing the different elements of the opening device;

Figure 2 is a similar view showing modifications in certain details;

Figure 3 illustrates the combination of the opening device with a particular type of container; and

Figure 4 is a perspective view showing the cutting action of the device.

Like reference numerals indicate like parts throughout the figures of the drawings.

In Figure 1 a metal cutting wire 10 has attached at its outer end a ring-shaped handle 11 and extends towards its inner end through an aperture 12 in a soft metal lid 13 of a container. The inner end of the wire 10 extends into the concavity of a small metal cup 14 and is attached at the centre of said concavity to the cup. The attachment of the wire to the cup is effected by passing the free end of the wire through a hole at the centre of the cup and soldering this end as at 15 to the outside of the cup. In the case of a wire which is of the thinness of stout thread or thin string the inventors have found in practice that a hemispherical cup of tin about three-eighths of an inch in internal diameter giving a clearance between the edge of the cup and the wire of a little less than three-sixteenths of an inch, gives satisfactory results.

In Figure 2 the handle portion 11 is formed by a loop in the wire itself and the
body at the inner end of the wire is in the form of a "diabolo" 16 the wire being secured around the central neck 17. It will be seen that with this construction also the preferred conditions as to clearness between the uppermost portion of the body and the cutting part of the wire hereinbefore referred to are satisfied.

Referring to Figures 3 and 4 a can 18 is shown which is adapted at its upper end to receive an ordinary lever lid 19. Below this lid is an inner lid 20 hermetically sealed around the cylindrical wall of the can. During the manufacture of the latter the wire 10 of the opening device to be applied to the can is passed through a hole in the inner lid 20 near the margin thereof. This hole is afterwards hermetically sealed by soldering around the wire. A cup 14 and handle 11 are attached to the inner and outer ends of the wire respectively in the manner already described.

To effect the cutting operation the ring 11 is gripped by the finger and the whole device is drawn bodily round the inner lip 21 of the can. In so doing the wire cuts through the material of the inner lid 20, which thereafter may readily be removed.

In Figure 4 a portion of the inner lid has been cut away at 22 in order to show more clearly the position which the wire 10 and the body 14 take up during the cutting operation. The handle 11 and that part of the wire 10 which is outside the inner lid are adapted to lie flat between the inner and outer lids when the latter is assembled on the can—this arrangement is clearly shown in Figure 3. It will be seen therefore, that the provision of an opening device does not interfere in any way with the ordinary outer lever lid or the operation thereof.

Although in the preferred construction of opening device the body 14 attached to the inner end of the wire has the characteristics illustrated in the drawings it is to be understood that it is within the invention to attach to or form on the inner end of the wire any body which is greater in at least one of its dimensions measured transversely to the axis of the wire, than the width of the hole through which the wire is passed or the width of the cut to be made by the wire. Moreover, it is obvious that the cutting device may be arranged to operate on any part—not necessarily the lid—of the container which it is desired to cut. The wire may, for example, be passed through a hole in the cylindrical wall of a container at a point near the junction of that wall and an end closure wall of the container.

What we claim as our invention and desire to secure by Letters Patent is:

1. The combination of a sealed can with an opening device comprising a cutting wire extending through a hole in the can at a point near the junction of the side and end walls thereof, said hole being sealed around the wire, a body which is attached to the inner end of the wire and which is greater in at least one of its dimensions measured transversely to the axis of the wire than the width of the hole aforesaid and of the cut to be made by the wire, and means at the outer end of the wire to permit the device as a whole to be drawn bodily by hand to effect the cutting operation.

2. The combination of a can, an outer removable lever lid thereon, an inner lid sealed in the can below the outer lid, a short length of wire extending through a hole in the inner lid at a point near the margin thereof, said hole being hermetically sealed around the wire, a cup-shaped body of greater cross-section than that of the wire and of the hole aforesaid and into the concavity of which the inner end of the wire extends and is attached at the middle of said concavity to the body, and a ring-shaped handle for the purpose described at the outer end of the wire, said handle together with that part of the wire which is outside the inner lid being adapted to lie flat between the inner and outer lids when the outer lid is assembled on the can.

3. The combination with a closed container, of an opening device therefor, comprising a cutting member extending through an opening in a wall of the container and having at its end within the container a portion which is of greater cross-section than that of the opening aforesaid, the cutting member being moveable bodily in its entirety to effect cutting of the wall of the container.

4. The combination with a closed container of an opening device therefor comprising a wire having one end thereof extended through an opening in one wall of the container, a body secured to the end of the wire within said container, and means secured to the opposite end of the wire whereby the device may be drawn in its entirety to effect cutting of the container wall.

5. The combination with a closed container having a sealable opening in one wall thereof, of an opening device for said container comprising a wire extending through the sealable opening, a body secured to the end of said wire within the container, and means secured to the opposite end of the wire whereby the device may be drawn in its entirety to effect cutting of the wall of the container.

6. The combination with a closed container of an opening device comprising a wire extending through an opening in a wall of the container, a body secured to the wire within the container, said body being free of said container and greater in at least one of its dimensions measured transversely to the axis of the wire, than the width of the hole through which the wire is passed or the width of the cut to be made by the wire.
of the axis of the wire than the width of the before mentioned opening, and means on the outer end of the wire whereby the wire and body may be drawn bodily to effect a cutting operation.

7. The combination with a closed container of an opening device comprising a cutting wire extending through an opening in one wall of the container, a body attached to that end of the wire which is within the container, said body being free of said container and of greater dimensions than the width of the before mentioned opening and the cut to be made by said wire and extending outwardly on each side of the wire from the point of attachment of the wire, and means at the other end of the wire whereby the wire and body as a whole may be drawn bodily to effect cutting of the wall of the container.

8. The combination with a closed container of an opening device comprising a cutting wire extending through an opening in one wall of the container, the wire on opposite sides of said opening being free of the container, a cup-shaped body of greater cross section than that of the wire and the before mentioned opening secured to said wire, the inner end of said wire extending into the concavity of said body, and means at the outer end of the wire whereby the device as an entirety may be drawn bodily to effect the cutting operation.

9. The combination with a cam having an outer removable lid and an inner lid sealed in the can below the outer lid, said inner lid being provided with an opening, of a wire extending through the before mentioned opening, said opening being sealed around the wire, the wire on opposite sides of said opening being free of the container, a body attached to the inner end of the wire, said body being greater in at least one of its dimensions measured transversely to the axis of the wire than the width of the before mentioned opening, and means secured to the outer end of the wire whereby the body and wire may be drawn bodily to effect the cutting of the inner lid, said means together with the wire outside the inner lid being contained between the inner and outer lids.

In testimony whereof we have signed our names to this specification.

WILLIAM SELBY-FAYERS.

ERNEST RAYER GATES.