

(No Model.)

J. ZIMMERMAN.
SHEET METAL TOP OPENING CAN.

No. 579,462.

Patented Mar. 23, 1897.

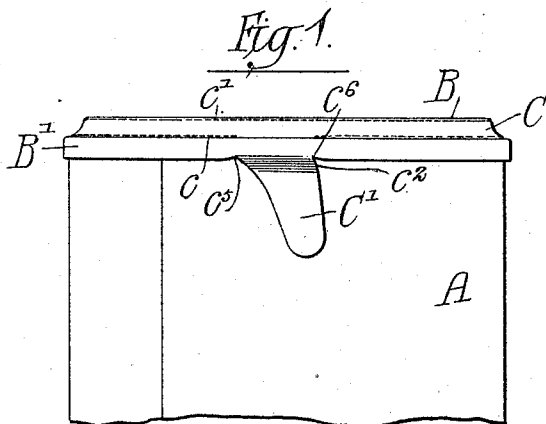
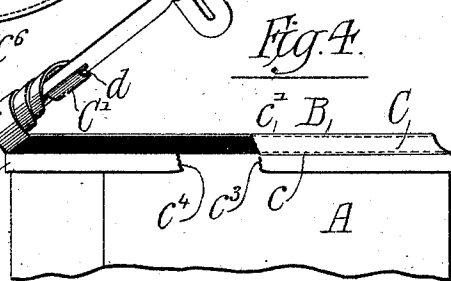
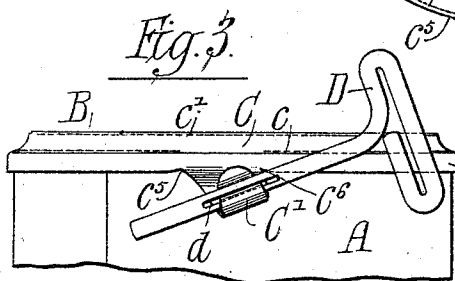
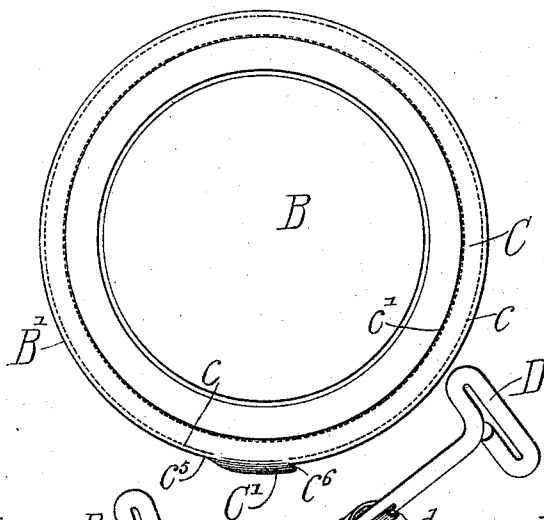


Fig. 2.



Witnesses:-

Louis M. Whitehead.

Jno. W. Adams.

Inventor:-

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by: Dayton Pool & Brown.

His Attorneys.

UNITED STATES PATENT OFFICE.

JOHN ZIMMERMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NATIONAL KEY-OPENING CAN COMPANY, OF SAME PLACE.

SHEET-METAL TOP-OPENING CAN.

SPECIFICATION forming part of Letters Patent No. 579,462, dated March 23, 1897.

Application filed January 2, 1894. Renewed March 11, 1895. Serial No. 541,361. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZIMMERMAN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet-Metal Top-Opening Cans; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to sheet-metal key-opening cans of the general class containing a detachable strip by the tearing out of which the can is opened, and it more particularly relates to the species of this general class in which the detachable strip is in the can end, cover, or head.

A primary object of the invention is to provide a construction in this species of key-opening cans in which a detachable strip so situated in the can-head may be more easily and certainly detached.

Another object of the invention is to simplify the construction in cans having such annular detachable strips when the flange of the can head or cap is provided with a laterally-projecting tongue connected with the strip.

The first-mentioned object of the invention is attained by making the detachable strip inclined to the general plane of the head or in the surface of a cone or pyramid and at or near the extreme margin of the head. By this construction the circumference of the inner edge of the annular detachable strip is made more nearly of the length of the outer edge thereof, and the strain in winding the strip upon the key is therefore more evenly applied to both edges of said strip. In addition to this advantage the key upon which the strip is wound in order to detach it may, if preferred, be held in the act of rotating it with its T head or lever over the head of the can instead of outside of it, which suggested position of the key results in the more certain tearing out of the strip along its weakened marginal lines and in less liability of its tearing across, with the result of failure to fully open the can.

In the accompanying drawings, which illus-

trate my invention, Figure 1 is a side elevation of a round can provided with my improvement. Fig. 2 is a top view of the can shown in Fig. 1. Fig. 3 indicates the kind of key desirably employed for removing the detachable strip from the head and the new position in which it may be applied to the tongue by reason of the inclination of the detachable strip. Fig. 4 is a side view of a portion of a can of which the detachable strip in the head thereof is partly torn out, and showing the preferred position of the key in the operation of detaching said strip.

A represents a can-body; B, a can-head, having a flange B' applied externally to the body A; C, an annular detachable strip in the head, and C' a tongue depending from the flange B'. The detachable strip C is made detachable by means of two weakened lines c and c' , the former of which is shown as falling short of a complete circle and with its ends separated at a point opposite the tongue C' and especially opposite the shorter side c^2 of said tongue. The inner of said weakened lines c' is shown continuous. The detachable strip is inclined to the plane of the can-head, giving to the strip a generally conical form, and it may advantageously be concaved transversely, as shown distinctly in Figs. 1, 3, and 4. This conical or inclined form and position of the detachable strip C manifestly gives to the opposite margins of said strip less inequality in length than they would possess if the strip were in the plane of the can-head, as it has heretofore been placed in former attempts to provide a detachable strip in the can-head. The result is that in winding the strip about a key the strains upon the opposite edges of the strip, tending to tear it away at its margins from the head, are more nearly equal and the strip is detached with greater certainty and ease, and especially with less liability of its being torn in two crosswise before its entire detachment. This last-mentioned fact is of the utmost importance when the detachable strip is situated in the can-head, since the uncertainty attending the removal of the strip as heretofore made—namely, in the plane of the head—has done much to prevent the adoption of such otherwise desirable construction. By

reason also of the inclined position given to the detachable strip in the construction here shown the key for removing the strip may be operated with its T-head over the can end, as illustrated in Fig. 4, and in consequence of its being rotated in this position the tearing of the strip crosswise or out of the proper weakened lines $c c'$ will be further prevented, inasmuch as little or no bodily movement of the hand which is turning the key is necessary to preserve its transverse direction to the strip being wound thereon, and the key is therefore more easily kept in proper relation to the strip to insure its tearing only along its marginal weakened lines.

The key D, which should be employed for tearing out the strip C when a free tongue C' is provided therefor and when the key is to be held in the position last above referred to, is preferably cylindric and slotted for engagement with said tongue, the slot d being situated or extended a proper distance from the end of the key to enable the latter to overhang the edge of the can when in operation, as indicated in Fig. 4. The key should also have the slot so situated in order that the key may be applied to the tongue C' somewhat in the position indicated in Fig. 3, and that room may be left between the tongue, when in the slot of the key, and the end of the key to allow the detachable strip immediately beyond the tongue to wind obliquely toward the end of the key without running off the same, thus making it unnecessary to materially or immediately change the inclination of the key to the direction of the strip when the key begins to operate upon the strip proper after having torn the tongue across the cover-flange and to the weakened lines $c c'$.

Heretofore in the construction of flanged can heads or caps having annular detachable strips terminating in tongues which project from the edge of the cap or head flanges weakened lines, or slits and weakened lines, have been invariably provided in continuation of the side edges of the tongue to the several weakened lines bounding the detachable strip, and the provision of means for producing such weakened lines in forming the cap or head has been the source of much experiment and trouble. I have found that such weakened lines, or such slits and weakened lines, are not essential and may be dispensed with, and that the tin will tear without them from the inner ends of the sides of the tongue to such strip-lines, and that the lines of rupture will then follow the latter, even though they are at substantially a right angle to the initial original lines of rupture. That is to say, in winding the tongue C' upon the key D a tear (indicated at c^3 , Fig. 4) through the unweakened tin will be made in continuation of the side c^2 of said tongue, and a corresponding tear at c^4 will be produced in continuation of the opposite side of said tongue to the weakened line c . It will be desirable to provide rather sharp entering an-

gles c^5 and c^6 at opposite sides of the base of the tongue C', as indicated in Fig. 1, and such angles are all that are required to most positively insure the tearing of the tin across the flange and across the detachable strip at the desired points of rupture. This feature of the invention is not restricted to use with the inclined form of the detachable strip.

The concave form of the conical detachable strip has an especial advantage in facilitating the opening of the can, due to the fact that in winding the strip upon the key the strip is transversely flattened, and as this flattening of the strip takes place where it is also being detached and involves a bending of the metal at the weakened line, which in itself tends to further weaken it, the detachment of the strip is by such concavity rendered more certain and successful.

It will be understood that the tongue C' is not a part necessary to the primary invention herein set forth, which consists in the inclined or conical or pyramidal form of the detachable strip, since other means than a tongue are known and may be used for engaging the key with the strip so as to start the latter at one end, among these devices being the key-engaging devices which are illustrated in my simultaneously filed and pending application for patent, Serial No. 495,293, and another elsewhere disclosed in which a key is fastened to the detachable strip by a rivet. My principal invention is therefore not restricted to the employment of a tongue C' or to any one of several particular means by which a key may be made to start the detachable strip. Nor do I wish it to be limited to the particular inclination of the detachable strip or to any particular kind of weakened line along its margins or to any other details of construction.

It will of course be understood that this invention in all its features may be applied to the heads of polygonal cans as well as to those of round or cylindric cans, as shown, and that the features relating to the tearing of the metal from the tongue to a weakened line bordering a detachable strip or part are severally applicable to caps and can-heads equally. I may manufacture, as separate articles, can heads or caps containing my improvements and adapted to be applied to cans by packers.

I claim as my invention—

1. A sheet-metal can having an external flanged cover provided with a free tongue projecting from the edge of its flange, said cover being also provided, adjacent to the flange, with a transversely-inclined, detachable strip, the outer weakened line bounding which strip is interrupted by a space opposite the tongue, substantially as described.

2. A sheet-metal can having an external flanged cover, provided with a free tongue projecting from the edge of its flange, said cover being also provided, adjacent to its flange, with an annular detachable strip, the outer

weakened boundary-line of which strip is interrupted by a space opposite the tongue, and the metal of the flange and strip being without weakened lines leading from the edges of the tongue to the weakened lines bounding the strip.

3. The flanged can head or cover described having an annular detachable strip situated radially inside its marginal flange and having also a free tongue projecting from said flange, said tongue terminating at its base in sharp

entering angles, and the metal between said angles and the weakened lines being of full strength.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOHN ZIMMERMAN.

Witnesses:

M. E. DAYTON,
TAYLOR E. BROWN.