(No Model.)

A. F. REMY.

KEY OPENING CAN.

No. 563,687. Patented July 7, 1896.

Fig. 1.

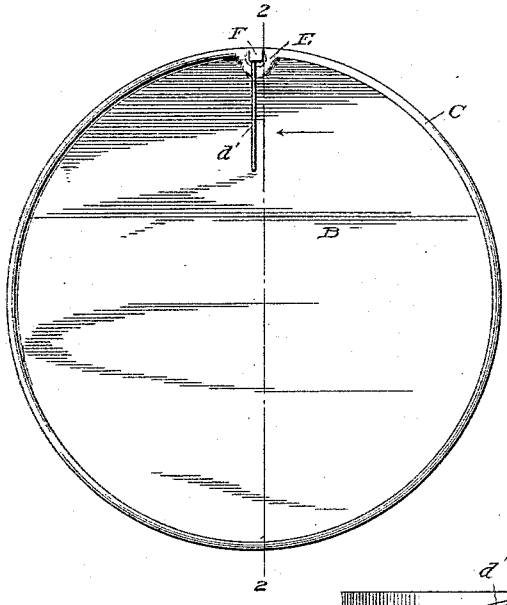
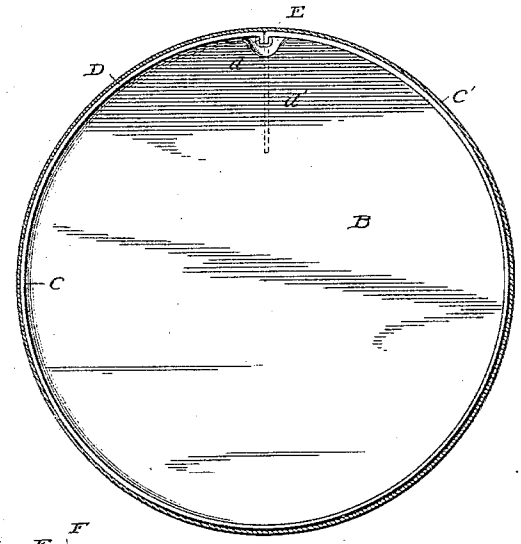


Fig. 3.



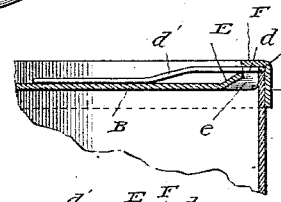


Fig. 5.

Fig. 2.

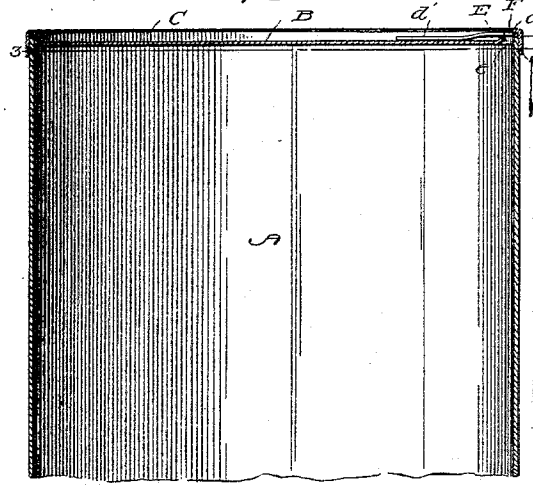


Fig. 6.

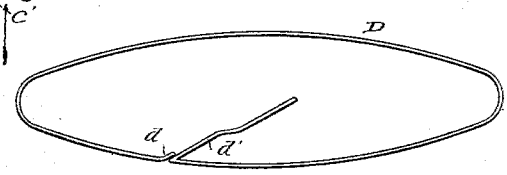
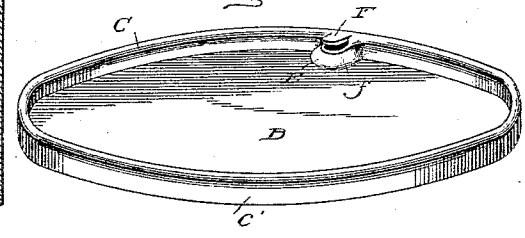


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT F. REMY, OF MANSFIELD, OHIO.

KEY-OPENING CAN.

SPECIFICATION forming part of Letters Patent No. 563,687, dated July 7, 1896.

Application filed January 3, 1896. Serial No. 574,236. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. REMY, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Key-Opening Cans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present improvement relates to what are commonly known to the public as "key-opening cans" of that class which provide for ripping open the can by means of a severing-wire which is held or confined within the head and between the head and the edge of the can-body.

The improvements which I have made in the structure of the head, in the mode of attaching the ripping-wire to the head, and in the mode of sealing the aperture through which the free end of the ripping-wire protrudes, all tend to the production of cans which can be manufactured economically and speedily in large quantities, because my improvements in the can are especially devised with a view to making the can and assembling its parts by machinery which I have invented.

In the manufacture of cans which are designed to be air-tight for the commercial package and storage of fruits, vegetables, soups, and other edibles, and which are equipped with ripping-wires which have protruding ends for the convenient opening of the cans, special provision must be made for hermetically sealing the aperture through which the free end of the ripping-wire protrudes in order to prevent air from having access to and spoiling the edibles packed in the can, and provision must also be made for holding the fastened end of the ripping-wire so tightly in place that it cannot be pulled out lengthwise when the ripping-wire is strained in the act of cutting out the head of the can to open the latter. The head should also be constructed and the ripping-wire so arranged that the desired product should not be appreciably enlarged over the sizes of ordinary cans so extensively used in commerce for vending edibles in the effort made to provide a self-opening can. The ripping-wire should have its free end so disposed that it will not interfere with packing or stacking the cans one on top of the other, and said wire should also be arranged to rip off the head close up to the can-body in order that the contents of the can may be fully and freely emptied without obstruction by the fragment of the head which adheres to the can-body. All of these desirable features are secured in a highly satisfactory and economical manner by cans made in accordance with my present improvements.

My invention contemplates the construction of a head from a piece of sheet metal of uniform thickness which is so manipulated or treated as to produce therein a circumferential raised bead, forming on the under side of the head a circumferential groove, and in an inwardly or outwardly extending bulge or raised portion which lies within the raised bead and produces a pocket on the inner face of said head. In the bulged or raised portion of the head is produced an aperture which is punched in a manner to leave a metal fragment, lip, or tongue which partially closes the aperture in the bulge produced in said head. The ripping-wire is fitted in the groove formed by the raised bead in the head, and one end of this ripping-wire has a hook or lip which takes or fits against one side of the bulged portion of the head, while the other, longer end of the ripping-wire is passed through the aperture in the raised or bulged part of the head, so that said last-named end of the ripping-wire extends through one side of the raised bead and inwardly toward the center of the head and lies close down to or upon said head, whereby the free or protruding end of the ripping-wire is disposed in a manner not to interfere with the packing or stacking of the cans one on top of the other.

Now, in order to complete the head, it is simply immersed or "floated" in melted solder, which operation causes solder to enter the aperture in the side of the bulged or raised portion of the head, and some of the solder finds its way through the aperture and lodges in the pocket on the inner side of the head, whereby the solder serves to hermetically seal the aperture through which protrudes the free end of the ripping-wire and it also serves to more securely hold the other hooked end of said ripping-wire in engagement with the bulged or raised part of the head.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view looking at the outside top end of my improved can. Fig. 2 is a vertical sectional view, on the plane indicated by the dotted line 2 2 of Fig. 1, through a portion of my improved can. Fig. 3 is a horizontal sectional view looking in the direction indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the head with the ripping-wire omitted to show the apertured and bulged portion and the lip more clearly. Fig. 5 is an enlarged detail cross-sectional view through a portion of the can-body and head, showing the mode of arranging the two ends of the ripping-wire; and Fig. 6 is a detached perspective view of the ripping-wire.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates a can-body, and B is one of the heads thereof. The head which I have elected to illustrate in the drawings is the one which is treated or manipulated to accommodate the ripping-wire C in the manner contemplated by my present invention, but the other head (not shown) may be of any approved or preferred construction.

The head B is, by suitable machinery, stamped and struck up from a single piece of metal which is of uniform thickness throughout its entire area. Said head has a raised, circumferential, hollow bead C, which extends a suitable distance above the plane or surface of the head for the accommodation of the ripping-wire D. The bead forms, on the under side of the head, an annular groove *c*, which is within the pendent flange *c'*, and said external flange *c'* constitutes the perimeter or edge of the head and it is arranged to project below the lower side or face of the head for a suitable distance in order to provide for the proper, secure attachment (by soldering) of the head B to the can-body. In the manipulation of the metal to make the bead and groove in the head the metal is also made with the bulged or raised portion E, which is produced by forcing out the metal from the under or bottom side of the head and at a point next to the raised bead, so that the bulged or raised portion E extends upwardly from the head B and inwardly from the raised bead for a suitable distance, say one-fourth of an inch (¼″) toward the center of the head. This raised or bulged portion thus produces a pocket *e* on the lower or under side of the head, for a purpose to be explained. In this raised or bulged portion E is produced an aperture *f*, which is preferably on the inner side of the bulged portion. In producing this aperture *f* the metal is not punched out or entirely removed from the bulged portion, but the metal is cut or slitted on two or three sides, so as to leave a fragment adhere to and remain integral with the metal, thereby forming the lip or tongue F.

The ripping-wire D has at one end a small hook *d*, formed or produced by bending the wire at right angles, while the other end, *d'*, of the wire, which is to protrude from the can-head, is bent so as to pass through the aperture *f*, below the lip or tongue F.

The wire D is fitted closely in the groove *c*, within the hollow bead C, to have the hooked end *d* thereof take or bear against one side of the bulged or raised part E of the metal, while the other end, *d'*, of the wire is passed through the aperture or slit *f*. The tongue or lip F is now pressed down upon the end *d'* of the ripping-wire, and, a suitable flux having been applied to the head around those parts where the solder is to adhere, the head is now immersed or floated in melted solder. The solder runs through the aperture or slit *f*, so that a portion of the solder lodges in the pocket *e* and in the slit *f*, and the tongue or lip F serves, in this connection, to collect or accumulate solder around the slit or aperture *f*, whereby the aperture or slit is hermetically sealed and the hooked end *d* of the wire is more securely held in place against being pulled out when the wire is strained during the operation of cutting out the head of the can. It will be noted that the free protruding end *d'* of the wire lies close down to or upon the head, and that it extends from the inner side of the bulged or raised portion E toward the center of the head. This disposition of the wires enables the cans to be piled or stacked one on top of the other without hindrance from the protruding ends of said wires.

The head is attached to the can-body by soldering the flange *c'* to said body in the usual or any preferred way.

In the operation of ripping open the can, the end *d'* of the wire D is engaged with a key or other suitable implement which is manipulated to coil or wind the wire thereon and cause the wire to tear through the top edge of the raised bead C, and by this operation the head is cut entirely from the can, directly over the upper edge of the can-body, thus leaving but a thin fragment of the head attached to the can-body. This is advantageous in that it enables the contents of the can to be removed by simply inverting the can, and there is no opportunity for the contents of this can to lodge against a portion of the head.

It will be noted that the ripping-wire D is so confined that it cannot possibly be displaced or pull out when the head B is properly attached to the can. This wire is compactly fitted in the hollow bead in which it is held by the upper edge of the can-body fitting with the flange *c'* and against the wire D, so that the wire rests directly upon the upper edge of the can-body. This arrangement is also advantageous in that the wire and raised bead provide a firm track and sup-

port for the key or other implement to bear and turn upon in the operation of coiling the wire to sever the head B. The two ends *d d'* of the ripping-wire ring D both terminate at the raised or bulged portion E, so that they practically meet or touch within the pocket *e*. Said construction insures practically the entire severance of the head B from the can, because the wire begins to cut at the point where the end *d'* protrudes through the head and the cutting does not end until the point is reached where the end *d* is attached to said head.

My improved self-opening can may be advantageously used for packing any substance in vessels which it is desirable to have sealed hermetically against the admission of air, such as paints, fruits, vegetables, edibles, and other substances. While I have illustrated the can as cylindrical and the head as in the form of a disk, yet it is obvious that the shape of the parts can be varied within wide limits without departing from the spirit of my invention, as, for example, the can may be square, oval, oblong, or other forms.

My improved cans are susceptible of manufacture at a figure very little above the cost of the ordinary cans of commerce, and I have estimated that they will cost less than one cent per dozen over ordinary cans such as are commercially used for canning vegetables and other substances.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A head for packages, cans and the like, provided with a raised bead and with a bulged portion forming a pocket which opens into a groove formed by said bead, combined with a ripping-wire one end of which is confined in said pocket and the other end extended through the bulged portion of the head.

2. A head for packages, cans and the like, made of a single piece of metal with a peripheral bead and with a bulged portion which lies out of the line of the bead and forms a pocket that opens into said bead, combined with a ripping-wire adapted to said bead and having a hook-shaped end which is confined in the pocket, the other end of said wire passing inwardly through the bulged portion of said head.

3. A can-head provided with a raised or bulged portion and a slit or opening which is formed to produce a tongue or lip, combined with a ripping-wire having one end held by the raised or bulged portion and its other end passed through the slit or opening; said slit or opening being hermetically sealed, as and for the purposes described.

4. A can-head provided with a raised or bulged portion, forming on one side of said head a pocket, and with a slit or opening partially closed by a tongue or lip, and a ripping-wire having a hook-shaped end fitted against the bulged portion and its other end passed through the slit or opening; said slit or opening being hermetically sealed, and the hooked end of the ripping-wire securely attached, by solder which accumulates around the lip or tongue and in the pocket, respectively, of said head, substantially as and for the purposes described.

5. A can-head having a raised circumferential bead and the bulged or raised portion which lies within said bead and is provided with a slit or opening partially closed by a tongue, and a ripping-wire seated in a groove formed by said raised bead and having one end held by the bulged or raised portion and its other end passed through the slit or opening which is hermetically sealed by a suitable agent, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT F. REMY.

Witnesses:
ELMER E. SHIREMAN,
THEO. E. REMY.