

(No Model.)

J. LEE.
SHEET METAL CAN.

No. 537,162.

Patented Apr. 9, 1895.

FIG. 1.

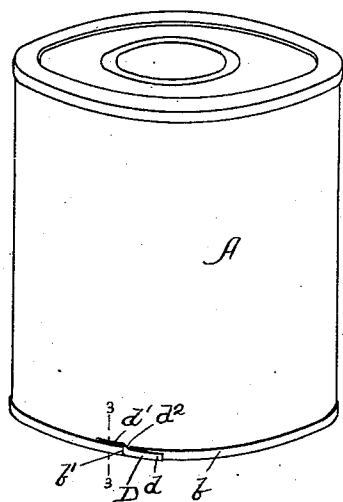


FIG. 2.

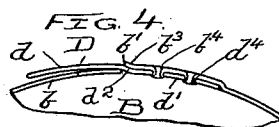
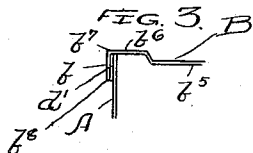
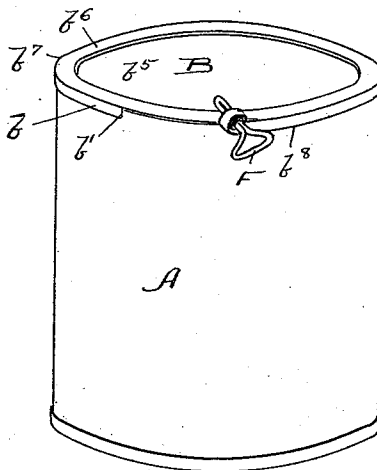


FIG. 5.

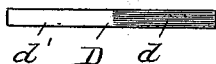
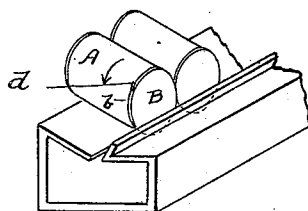


FIG. 6.



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UNITED STATES PATENT OFFICE.

JOHN LEE, OF SAN MATEO, CALIFORNIA.

SHEET-METAL CAN.

SPECIFICATION forming part of Letters Patent No. 537,162, dated April 9, 1895.

Application filed December 13, 1894. Serial No. 531,633. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEE, a citizen of the United States, residing in San Mateo, in the county of San Mateo and State of California, have invented a new and useful Improvement in Sheet-Metal Cans, of which the following is a specification.

My invention relates to sheet metal cans, and more particularly to the construction of what is known as tearing strip or key opening cans. Heretofore these tearing strip or key opening cans have usually been made by providing the body or head portion of the can with a tearing strip marked off or bounded by one or more scores, beads or weakened lines along which the strip tears or separates; the tearing strip being furnished with a projecting tongue to start the winding. This projecting tongue is usually made integral with the tearing strip, but it has sometimes been made of a separate short piece soldered to the tearing strip. The provision of the can with weakened lines to mark off the tearing strip requires a special operation in the manufacture of the can, thus adding materially to the cost of manufacture; and the provision of the projecting tongue, if it be made integral with the tearing strip, requires a special construction of can making machinery and dies, and also adds considerably to the amount of stock or tin plate required to make the cans; and if the tongues are made in a separate piece the soldering of the same in place is a somewhat slow and expensive operation, requiring care to prevent the strip being soldered fast throughout its whole length, and unless specially located interfering with the usual rapid and inexpensive method of soldering the end and side seams of the can itself; and the scored or weakened lines in the can frequently so diminish the strength of the cans as to cause them to burst in the processing, or to render them liable to injury in handling and shipment, especially if the weakened lines are not formed with the greatest care.

The object of my invention is to provide a key opening can of a simple, cheap and practical construction; which may be opened easily and perfectly by winding a tearing strip around a key; in which the full strength of the ordinary can will be preserved; which re-

quires no special score, beads or weakened lines to enable the can to be opened; which may be made by the ordinary dies, machinery and processes of manufacture; and in which the separate projecting tongue may be soldered in place by the same operation by which the head itself is soldered to the body.

I have discovered, and herein my invention consists, that the ordinary right angle flange of the can head, which fits outside the can body, will of itself, without any special provision or scores or weakened lines serve perfectly as a tearing strip; and that the same will separate perfectly and naturally at the corner between said flange and the flat or disk portion of the head. I find also that a separate tongue to begin the winding may be conveniently attached and soldered in place at the same time the head is soldered to the body in the usual manner by rolling in an inclined position through a bath of molten solder, by the simple expedient of making the tongue of a partially tinned and partially untinned strip, so that the untinned portion which projects outside will not be soldered fast to the periphery of the can, while the tinned portion will be soldered fast. By this simple expedient I securely and properly solder the tongue in place by one and the same operation with that employed for soldering the head to the body and without any additional expense or labor. In utilizing the exterior flange of the can head as the tearing strip, the key around which this flange or strip is being wound is held at an angle to the axis of the can, so as to cause the lower or free edge of this flange or strip to separate from the body in advance of the upper edge of this flange or strip where it separates from the flat or disk portion of the head. This causes the tearing to be done by a kind of shearing action, and prevents any tendency of the strip to run out. By separating the lower edge of the strip first, or in advance of its upper edge the tendency is to cause the line of tear to run or incline in the opposite direction from the free edge of the strip, that is to say, to run or incline toward the flat or disk portion of the head; and as the line of tear thus tending to run or incline toward the disk cannot run into the circular disk portion of the head, it of course follows that the flange or strip must continually sepa-

rate at the corner between the flange and circular disk portion of the head.

In practicing my invention I make the corner uniting the flange and disk of the head as near a right angle corner as can conveniently be done, that is to say, I prefer not to make the corner greatly rounded, as is sometimes done in the making of cans.

My invention also consists in the novel devices and novel combinations of parts and devices herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout all the figures, Figure 1 is a perspective view of a can embodying my invention. Fig. 2 is a similar view illustrating the method of opening the can by winding the flange of the head about a key held at an angle or inclination to the axis of the can. Fig. 3 is a detail sectional view on line 3—3 of Fig. 1. Fig. 4 is a detail sectional view at right angles to the axis of the can. Fig. 5 is a detail plan view of the separate tongue strip, the shaded portion indicating the black or untinned part and the plain portion indicating the tinned part of the tongue strip; and Fig. 6 is a detail perspective view illustrating the method or process of soldering the separate tongue strip in place by the act of soldering the end seam of the can in the usual manner by rolling the can through a solder bath.

In the drawings, A represents the can body and B the can head, the same being furnished with the usual flange *b* fitting outside the body. The can head flange *b* is provided at one point with a slit or cut *b'* across the same, at which the separate tongue D is inserted between the can head flange and can body, leaving a portion *d* of the tongue strip projecting outside for attachment to the key F to start the winding. The portion *d'* of the tearing strip D which is inserted between the flange of the can head and the can body, is tinned or otherwise prepared so that it may be soldered to the can head and body, and make a perfect closure. The portion *d* of the tongue D however, which projects outside and is to remain free from the can so that the key may be conveniently applied is of plain or untinned sheet steel or iron or otherwise prepared, so that when the end seam of the can is rolled in a bath of molten solder or otherwise brought in contact with the solder in the act of soldering the head to the body, this outside untinned portion of the tongue D will not take the solder or be soldered to the exterior surface of the can. I am thus enabled by the simple act of soldering the head and body together to also at the same time solder the separate tongue D in place, and leave its projecting end *d* entirely free and unattached; and this without any extra care or expense.

To limit the extent to which the tongue D may be inserted in the slit *b'*, I preferably

provide it with a shoulder or offset *d'*, and the flange *b* of the can head may also be preferably provided with a slight offset, shoulder or pocket *b'* to receive the tongue strip. Ordinarily the frictional fit, bite or clamping action between the flange of the can head and the can body, especially if the can heads are made tight fitting, as they should be, will be sufficient in itself to properly hold or clamp the tongue strip D in place during the soldering operation or until it is soldered fast; but if preferred the strip D may be additionally secured to the flange *b* by piercing and clinching the parts together, as indicated in Fig. 4 at *b'* *b'*. The can head B is also preferably provided with the usual countersunk portion *b'*, but the portion *b'* which is united by the corner *b'* with the flange *b* should be a flat plain disk, as indicated in the drawings.

By simply holding the key F at an angle to the axis of the can during the winding operation, as indicated in Fig. 2, the lower free edge *b'* of the flange *b* will separate from the body A of the can in advance of the upper or corner edge *b'* of the flange; but this same method of tearing the flange from the can by causing its free or lower edge to separate in advance of its upper edge, may be effected in other ways, as for example by making the key tapering.

I do not herein claim the process of soldering a tongue strip to a tearing strip, or the process of soldering the tongue strip and can head to the can body; and I desire to reserve the same for the subject of a separate application.

By thus utilizing the corner, or change in direction, between the cylindrical flange of the can head and the flat or disk portion of the head, itself, as the line of separation for the tongued tearing strip, I entirely avoid the necessity for weakening the can with any special score or weakened line. It will of course be understood that this corner or change in direction between the flange of the head and the disk portion thereof is necessarily present in all cans having outside fitting flanged heads; and while it may be true that the act of making or drawing up such flanged heads may slightly weaken the strength of the stock in the flange, and possibly also to some extent, too, at the corner where the drawing operation terminates and is less severe; still, as this slight weakening is only the ordinary-weakening of such flange or corner incident to every can including those having no self opening construction or tongued tearing strip of any kind, it will of course be understood that by use of the words "unscored," "unweakened," "no score or weakened line" I do not mean thereby the slight weakening incident to the bending of the stock to give the necessary change of direction or to form the corner between the disk and flange of the head. Nor do I mean thereby that the head of my can has not the ordinary right angle flange and the ordinary

corner uniting such flange with the flat disk-portion of the head. On the contrary, what I do mean by these words is what is ordinarily understood by those skilled in the art, viz: the usual special scores or weakened lines heretofore employed for marking off the tearing strip.

In my can, while it may possibly be true that the stock may be slightly weakened at the corner uniting the flange and the disk portion of the head, it is really the right angle change in direction between the cylindrical head and the disk, and the rigid support given by the edge of the disk directly at the line of separation to the key and coil in the act of winding the flange about the key and separating the flange from the disk, which, I think, enables such corner or change of direction to serve without any special score or special weakening as an efficient line of separation for a tearing strip. At least this is the best explanation I am now able to give of the reason why my invention does actually operate, and since making the discovery I have given some considerable time, study and experimenting to the matter. My experiments lead me to believe that if the flange of the head is formed or could be formed without weakening the stock at all at the corner, the corner may be utilized just the same as an efficient line of separation.

I claim—

1. A sheet metal can having no score or weakened line and comprising the body A and head B furnished with a flange *b* fitting outside of the body and soldered thereto, said can head flange *b* being provided with a projecting tongue and serving itself as a tearing strip for opening the can, by separating from the flat or disk portion of the head at the corner uniting the flange therewith, substantially as specified.

2. The combination with can body A of head B having outside fitting flange *b* furnished with a slit or cut across the same, said head B having no scored or weakened line and a separate tongue strip D in part inserted between the flange of the can head and the can body and soldered thereto, the corner uniting the flange of the head with the flange or disk portion thereof, itself, serving as the line of separation of the flange from the head in coiling said flange as a tearing strip around the key substantially as specified.

3. The combination with a can body A of

head B having outside fitting flange *b* furnished with a slit or cut across the same, said head B having no scored or weakened line and a separate tongue strip D in part inserted between the flange of the can head and the can body and soldered thereto, the outside portion of said tongue strip being untinned and the inside portion tinned, the corner uniting the flange of the head with the flange or disk portion thereof, itself, serving as the line of separation of the flange from the head in coiling said flange as a tearing strip around the key substantially as specified.

4. The combination with can body A of head B having outside fitting flange *b* furnished with a slit or cut across the same, said head B having no scored or weakened line and a separate tongue strip D in part inserted between the flange of the can head and the can body and soldered thereto, said tongue strip and can head flange being pierced and clinched together, the simple corner uniting the flange and the flat or disk portion of the head itself serving as the line of separation substantially as specified.

5. The combination with can body A of head B having outside fitting flange *b* furnished with a slit or cut across the same, said head B having no scored or weakened line and a separate tongue strip D in part inserted between the flange of the can head and the can body and soldered thereto, said tongue strip D being provided with an offset d^2 , the simple corner uniting the flange and the flat or disk portion of the head itself serving as the line of separation substantially as specified.

6. The combination with can body A of head B having outside fitting flange *b* furnished with a slit or cut across the same, said head B having no scored or weakened line and a separate tongue strip D in part inserted between the flange of the can head and the can body and soldered thereto, said tongue strip D being provided with an offset d^2 , and said can head flange having an offset or pocket b^3 , the simple corner uniting the flange and the flat or disk portion of the head itself serving as the line of separation substantially as specified.

JOHN LEE.

Witnesses:

H. M. MUNDAY,
EDMUND ADCOCK.