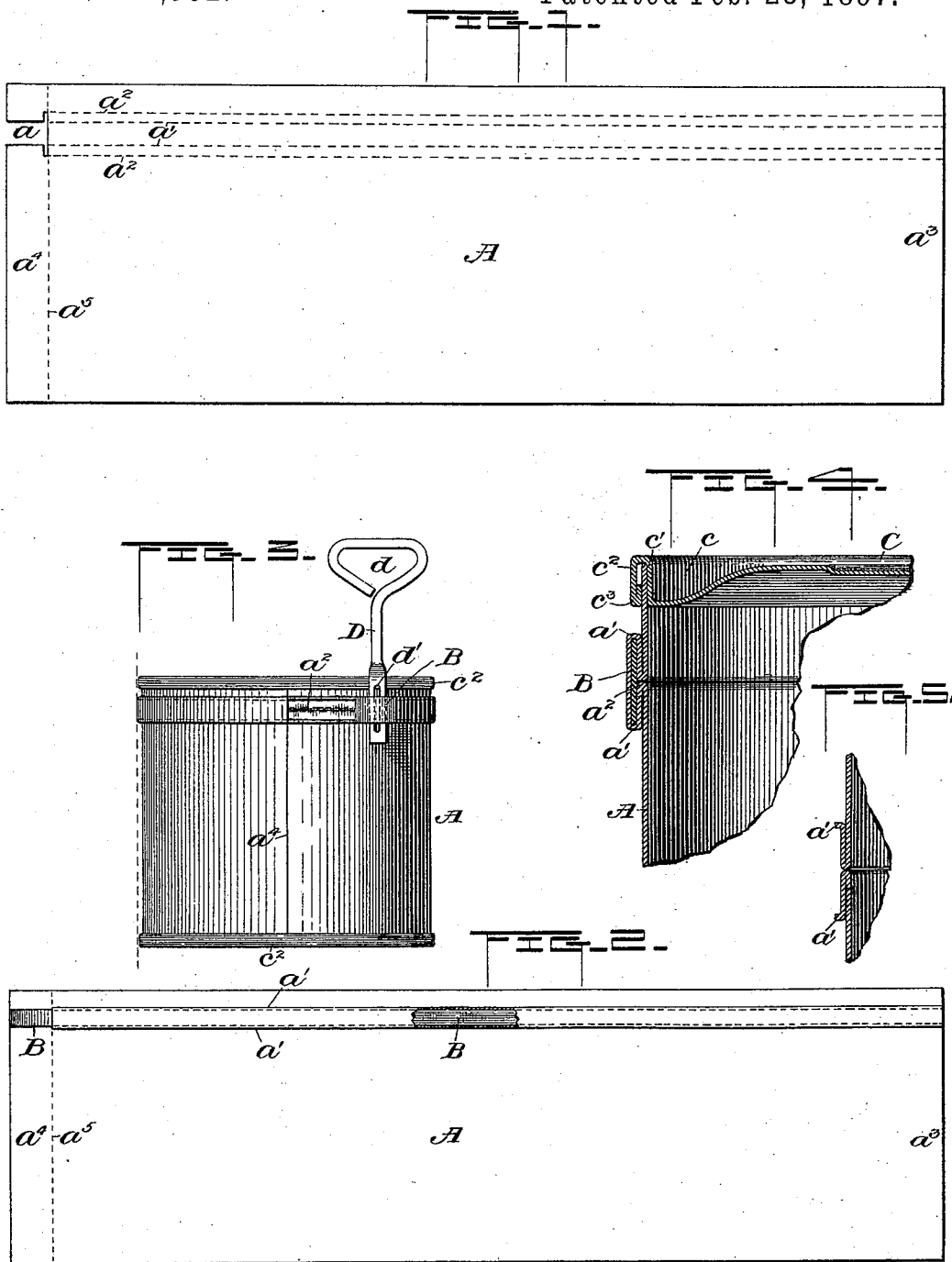


(No Model.)

J. W. HILL & R. P. McKAY.
SHEET METAL CAN.

No. 577,552.

Patented Feb. 23, 1897.



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UNITED STATES PATENT OFFICE.

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SHEET-METAL CAN.

SPECIFICATION forming part of Letters Patent No. 577,552, dated February 23, 1897.

Application filed January 25, 1896. Serial No. 576,799. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH W. HILL and RICHARD P. MCKAY, citizens of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Sheet-Metal Cans; and we do 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, 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 key-opening coated sheet-metal cans or vessels of the class in which a strip of tin is located within the sheet metal forming the body of the vessel and embedded in a fold of the same; one end of this strip protruding outside of the vessel, whereby said strip may be seized and drawn outward by means of a key, thus severing the metal exterior of the vessel and giving access to its contents.

This invention is in the nature of an improvement upon the construction of any or all key-opening cans in which the sheet metal is weakened in any way along the line or lines of separation and in which a tongue of the metal between these weakened lines projects and by the engaging of which with a key the can may be opened, or in that class of cans in which a wire is embedded in the can or soldered onto the can along the interior in a fold or groove of weakened metal and which are opened by drawing the said wire through this weakened metal.

In our invention the metal is not weakened in any way, as it is unnecessary to do so for the purpose, the result being better and more economically accomplished by means of a strip of tin folded into the body of the can in the manner hereinafter described. The coating of sheet metal is in no wise destroyed by using this strip of tin, as in the case where the metal is broken or weakened, and by not using any wire to come in contact with the contents of the can said contents are not discolored nor injured by rusting of said wire. In our improved mode of manufacture there is no solder employed in any

manner upon the inside of the can. This is an important feature, since it is well known that solder is harmful in many kinds of canned goods, because the combination of acids comes in contact with the lead used in soldering, thereby forming the injurious salts of lead.

This invention does away completely with all the various methods heretofore employed of weakening the sheet metal by breaking, cutting, or thinning by rollers, by dies, or by a single die cooperating with an anvil, or by any other suitable device or devices.

In the drawings, Figure 1 is a plan of the blank for the can-body. Fig. 2 shows the blank folded with the cutting-strip inclosed in said fold. Fig. 3 is an elevation of the completed can, showing the effect of the operation of the key in opening it. Fig. 4 is a detail showing the fold and one of the end seams in section. Fig. 5 is a similar view showing the can opened.

The body-blank A, Fig. 1, is a rectangular sheet, having in one end, near the top, a T-shaped notch *a*, the width of the stem of the T being equal to the width of the strip to be torn from the fold, while its length is the same as that of the lap which is to form the side seam.

By means of a special machine, which will form the subject of another application, the blank A is folded lengthwise along the lines *a'* *a''* into the shape shown in Fig. 2, a strip of tin or other sheet metal B being at the same time inclosed in and filling the flat fold. The inner edges of the fold preferably meet along the line *a''*, as seen in Fig. 4, but in any event the edges of the strip B are protected from contact with the contents of the can. The folded sheet and strip are then formed into a can-body, the edge *a'''* being lapped over the edge *a''* to the line *a''*, corresponding with the end of the notch *a* and soldered on the outside. The heads C are then put on, each having an annular countersink *c* to form a flange *c'*, fitting inside the can-body, and an outer flange *c''*, fitting down over the outside of said body, the edge of the flange *c''* being doubled at *c'''* to inclose the raw edge. The flange is soldered to the body on the outside. We do not limit ourselves, however, to this construction of head and joint, since any suitable

mode of forming the heads and uniting them to the body may be employed. We prefer, however, to use a seam which will project beyond the body of the can to or nearly to the line of the flat fold, so that when the cans are packed they will be in contact or nearly so at top and bottom as well as at the level of the fold. It will thus be seen that our flat fold is superior to any other shape in that it economizes space and obviates any tendency of the fold on one can to ride up over the fold on an adjacent can. The end of the cutting-strip B is left projecting at the side seam, lying flat against the side of the can. It is thus readily engaged by a key D, preferably composed of a piece of stout wire bent at one end to form a handle d and flattened at the other end to permit the cutting of a slot d' , which is slipped upon the end of the strip B. When the key is turned to roll up the strip, the metal composing the fold is torn apart along the lines a' , the portion between said lines being wound up on the key with the strip B. This leaves the upper part of the can free to be lifted off, as shown in Fig. 5.

In the manufacture of this invention but one extra machine is needed, and this at one operation automatically forms, folds, and places the narrow strip of tin therein. The shape of this fold is such that there is no need of soldering or bending of the strip of tin at the inner end to cause it to remain in the fold while it is being wound up by the key.

The steps in our method of forming the can above described may be summed up as follows: The coated blank of sheet metal is suitably notched to provide for the projecting of the strip of tin through the body-blank, or it may be folded into the body-blank without notching, or after the strip is folded it may be treated exactly as a plain body-blank is used in the formation of a can under ordinary circumstances. The strip of tin folded into the body-blank forms no obstacle to the soldering on a horn in the usual manner, as it is no objection if the solder does cover the strip of tin, although it is unnecessary to keep it in place, and it does no harm because the action of the key is such that it will tear loose and tear open the can even if the strip is soldered to the body of the can unintentionally. The heads may be put on and the can completed in the usual manner. The action of our combination key and strip of tin contained in the fold of the body of the can of our invention is positive, thus obviating the difficulty experienced in many devices for key-opening cans, which have been found to be impracticable because of increased cost of manufacture or because of the difficulty arising when the weakened lines or thin portions of the can-body are not exactly parallel and of the same thickness. The portion of the body contained between these lines does not tear evenly, but will tear obliquely or trans-

versely to the line of separation and break off, thus defeating the object in view.

In Figs. 4 and 5 we have shown the folded edges of the can as coming close together. As a matter of fact, it would make no difference if they did not meet by a sixteenth of an inch, since the contents of the can would not in any case come in contact with anything but the inner surface of the tin cutting-strip and would receive no damage thereby. In cases where the can contains liquids it would be of advantage to have the edge a^3 slightly separated, so that when the can is opened about as much as is shown in Fig. 3 it can be turned over to let part of the contents run out.

One other point of advantage worth noting is this: In all other devices for opening cans by means of tearing out the body with the aid of a key acting in conjunction with a part of the body of the can running along or between weakened parallel lines and in that class of cans in which a wire is used to cut the can a more or less rough or serrated edge is left on the upper part of the can where it is torn open. This is all avoided in our mode of construction and operation, as shown in Fig. 5, the surface being smooth and rounded and reinforced, formed by turning over the can-body, the edge that is cut being below the top of the separated can at a^2 . This mode of construction would not interfere with taking out the contents of the can in case it was solid, and the person using the can would not be in any danger of cutting the fingers on the sharp torn edges of the same.

We claim as our invention—

1. A can or other vessel constructed of sheet metal having a flat strip of sheet metal folded in the body thereof, the strip being made a little longer than the length of the can-body blank, so as to project at the end, the metal of the body of the can having been in no way weakened or prepared for the reception of this strip, except the folding, substantially as described.

2. The can-body having a strip of sheet metal contained within an outwardly-projecting flat fold, which extends around the can-body, said strip lying parallel with said body, one end of said strip terminating with the outside edge of the lapped side seam and the other end of said strip projecting a convenient distance from the other edge of the lapped seam whereby said strip may be engaged by a proper key, so that when the key is turned, the contained strip and the outer portion of the fold are wound up together and the body severed along the upper and lower edges of the fold, substantially as described.

3. A sheet-metal can having a portion of its body folded into an outwardly-projecting fold or bead, composed of the flat portions a^2 a^2 lying against the body of the can, and the flat

portion *a' a'* lying parallel with the body of the can, the folds *a'* being at the upper and lower edges of said flat fold, and a flat cutting-strip of metal inclosed in and filling said
5 fold and lying parallel with said can-body, whereby the fold and inclosed strip project but slightly beyond the wall of the can and offer a broad, flat outer surface to come in contact with adjacent cans when packed, sub-
10 stantially as described.

4. A blank for a can-body, consisting of the

rectangular metal sheet A having in one end near the top, the T-shaped notch *a*, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH W. HILL.
RICHARD P. MCKAY.

Witnesses:

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