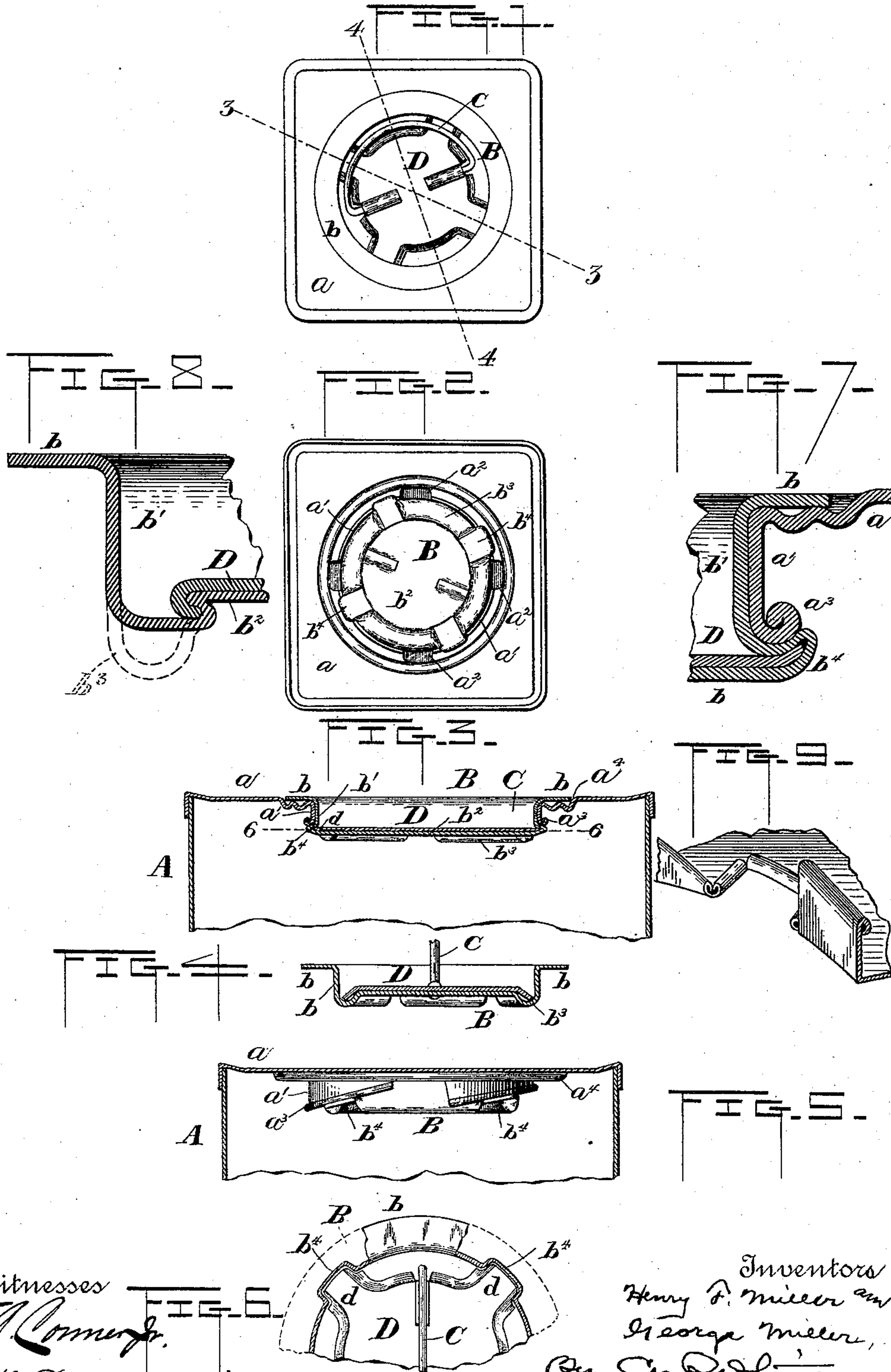


(No Model.)

H. F. & G. MILLER.  
SHEET METAL CAN.

No. 539,776.

Patented May 21, 1895.



Witnesses  
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# UNITED STATES PATENT OFFICE.

HENRY F. MILLER AND GEORGE MILLER, OF BALTIMORE, MARYLAND,  
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## SHEET-METAL CAN.

SPECIFICATION forming part of Letters Patent No. 539,776, dated May 21, 1895.

Application filed November 2, 1892. Serial No. 450,748. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY F. MILLER and GEORGE MILLER, citizens of the United States, residing at Baltimore, in the State of Maryland, 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.

Our invention relates to packing and storing vessels and its object is to provide an airtight closure for sheet metal cans and other vessels, especially those used for preserving edible articles. In such vessels, it is necessary to close them so tightly that the germs in the atmosphere cannot gain access to the contents. Many ways of accomplishing this have been proposed and used, among them closures which operate with a bayonet joint or mutilated screw thread action. It is this class to which our invention belongs. The cover is provided with projecting lugs or lips which engage with inclined flanges on the can, so that when the cover is given a partial rotation, the lugs ride down under the flanges and draw the cover tightly down upon its seat. In the practical manufacture of a sheet metal cover adapted to be closed in this manner, considerable trouble is likely to arise in the attachment of the handle or bail by which it is manipulated. The bail is liable to be twisted off by reason of the severe strain to which it is subjected in rotating the cover to lock or unlock its lugs from the inclined cams. If a rubber or other gasket is used to pack the joint, the parts are liable to become cemented together, necessitating the exertion of great force to start the cover in the act of opening the can. It is customary to attach the bail by solder, but this frequently gives way and the bail is torn off without starting the cover. Our invention provides a new mode of attaching the bail without the use of solder, and in a very rigid and secure manner. Furthermore, in closures of this class, it is

necessary to make the locking lugs or lips on the cover quite strong and rigid, so that they will resist the wear to which they are subjected in opening and closing the can, and will not yield or break under the strain to which they are put. Moreover, the flanges or inclined cams must be strong and stiff and provided with good bearing surfaces for the lugs, especially when the bail is so firmly attached as it is by our invention and therefore capable of resisting excessive torsional strain.

Our invention includes, therefore, a mode of strengthening the lugs and flanges and giving them good bearing surfaces.

In the accompanying drawings, Figure 1 is a top plan view of a can embodying our improvements. Fig. 2 is a bottom plan view of the can top and cover. Fig. 3 is a vertical cross-section on line 3 3, Fig. 1. Fig. 4 is a vertical section of the cover on line 4 4. Fig. 5 is a similar section showing the depending cams in elevation. Fig. 6 is a horizontal section on line 6 6, Fig. 3. Figs. 7 and 8 are sections on an enlarged scale of modifications.

The body A of the can may be square or of any suitable cross section. In its top  $a$  is formed a circular opening or mouth, surrounded by a depending flange  $a'$ . At two or more points around the mouth, notches  $a^2$  are cut in the top of the can, the flange of course being cut away at these places. The portions of the flange which are left between the notches are formed with inclined edges, all running downward in the same direction, as shown, and constituting a series of inclined planes or cams. The metal is turned back upon itself along these edges, being preferably coiled, as at  $a^3$ , Figs. 3, 5 and 7, so that a smooth unbroken surface is given to the cams, and they are considerably stiffened and strengthened. The raw edge of the metal is completely inclosed, so as to be protected from oxidation and from the contents of the can. This feature we regard as of great importance. The cover B has a flat flange  $b$  to rest upon the can top around the mouth, where it is preferably received in a slight annular countersink  $a^4$  so as to lie flush with the top of the can.



The central part of the cover is countersunk, forming a vertical wall  $b'$  and a flat bottom  $b^2$  united by a downwardly projecting peripheral bead  $b^3$ . At two or more points corresponding in number and position with the notches  $a^2$  this bead is forced outwardly in a fold  $b^4$  forming a lip or lug which projects beyond the face of the vertical wall  $b'$ . Since said wall is of such a diameter that it fits snugly into the mouth of the can, it follows that the lips  $b^4$  project under the flange  $a'$ , the notches  $a^2$  permitting the lips to pass down into the can. When the cover is given a partial rotation, the lips are carried along down the inclined edges of the cams, whereby the flange  $b$  of the cover is drawn down tightly upon its seat. A gasket of paper, rubber or any suitable material may be placed under the flange  $b$ .

To give the lips  $b^4$  a broad and firm bearing on the cams, we prefer to incline them, as shown in Fig. 5, into a position parallel with the edges of the cams. The lips are compressed against a gage so that they all stand at exactly the same distance from the flange  $b$ . When, therefore, the cover is turned, the lips all engage the cams simultaneously, and with an equal pressure, thus insuring an even and uniform seating of the flange  $b$  upon its seat. To give the lips a better hold upon the coiled edges of the cams, they may be curved upwardly as shown in Fig. 7. The lips are quite strong and rigid by reason of their being composed of a double thickness of metal folded together, but we strengthen them still further by the manner in which we attach the bail C to the cover. The bail is hinged, so as to fold down into the countersink in the cover to permit the cans to be packed one on top of the other. The inbent ends of the bail are received between the bottom  $b^2$  of the cover and a sheet metal plate D, preferably in suitable sockets struck up in these parts, as shown. The plate D is not soldered to the cover, but is held by having its edges or a portion of them nipped by or interlocked with the metal of the cover, preferably by the folds which form the lips  $b^4$ . The plate may be of any suitable shape, but we prefer to utilize the blank punched out of the can top when the mouth is made, the metal cut out from the notches  $a^2$  forming ears  $d$  which are caught in the lips or folds  $b^4$ . The bail and the plate are placed in the countersink of the cover before it is subjected to the lip forming dies, so that the lips are made and the plate is secured by one and the same operation of the dies. Instead of attaching the plate by the ears, we may force inwardly toward the center of the cover those portions of the bead  $b^3$  left between the lips  $b^4$ , thereby infolding the edges of the plate as shown in Fig. 8. In this case, the plate need not be formed with ears, though if desired, both modes of attaching the plate may be used. Other modifications of this manner of attaching the plate will be

readily devised, and we do not limit ourselves to those illustrated and described.

This construction gives a cover with a double bottom, whereby the entire top is stiffened, and the lugs are greatly strengthened by reason of the additional thickness of metal inserted into them. The bail is strongly attached to the cover, and it is impossible to twist it off by any force which the fingers can apply in opening or closing the can.

In addition to coiling the edges of the flange  $a'$ , we also coil the edges of the notches  $a^2$ , thereby entirely concealing the raw edges of the metal and preventing them from rusting and so contaminating the contents of the can. This coiling of the edges of the notches enlarges the notches, so that when the blank punched from the can top is utilized as the plate D, it can be used without any trimming, as will be readily understood by those familiar with the art of sheet metal working.

We have described our invention as applied to a sheet metal can, but it is evident that a cover made in accordance with our invention is applicable to other vessels, suitable internal cams being formed to engage with the locking lugs. We provide a construction of bail, cams and lugs which all co-operate in producing a strong and air-tight closure, and one which cannot be injured or broken by any of the uses for which it is intended.

Having thus described our invention, what we claim is—

1. The combination with a can top having its mouth provided with depending cams, of a cover having a countersunk central portion provided with projecting lips inclined so as to be parallel with said cams, each of said lips being composed of a fold in the metal of the cover, substantially as described.

2. A sheet metal can top having its mouth provided with internal depending flanges having inclined edges, the metal along said edges being coiled to form a smooth surface, in combination with a cover having lips adapted to coact with said flanges to hold the cover in place, substantially as described.

3. The combination with a can top having its mouth provided with depending flanges having inclined coiled edges, of a cover provided with curved lips to fit said edges, substantially as described.

4. The combination with a can top having its mouth provided with depending flanges having inclined coiled edges, of a cover provided with curved lips inclined to lie parallel with said edges, substantially as described.

5. The combination with a can top having its mouth provided with inclined flanges, of a cover having lips composed of a fold in the metal of said cover, said lips being reinforced by an extra thickness of metal inserted into and held therein, substantially as described.

6. The combination with a can cover hav-



ing a countersunk central portion, of a plate received in said countersink and having edge portions infolded in the metal of the cover, and a bail having its ends held between said plate and the cover, substantially as described.

7. The combination with a can cover having a countersunk central portion, of a plate received in said countersink, and having edge portions projecting into folds in the wall of the countersink, and a bail having its ends held between said plate and the cover, substantially as described.

8. The combination with a can cover having a countersunk central portion provided with projecting lips composed of folds in the metal of the cover, of a plate received in the countersink and having ears nipped in said folds, and a bail having its ends held between the plate and cover, substantially as described.

9. The combination with a can top having its mouth provided with depending flanges having inclined edges, of a cover having projecting lips composed of folds in the metal of the cover, a bail, and a bail holding plate

having edge portions nipped in said folds, substantially as described.

10. The combination with a sheet metal can having its mouth provided with notches, of a cover having locking lugs to pass down through said notches, a hinged bail, and a plate holding said bail in place, said plate being the blank punched from the can top in forming the mouth, the metal removed from the notches forming ears on the plate which project into the locking lugs, whereby the plate is securely held without the use of solder, substantially as described.

11. A sheet metal can top having notches to admit locking lugs on the cover, said notches having coiled edges, substantially as described.

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

HENRY F. MILLER.  
GEORGE MILLER.

Witnesses:

PH. H. HOFFMAN,  
JAS. GLEN.